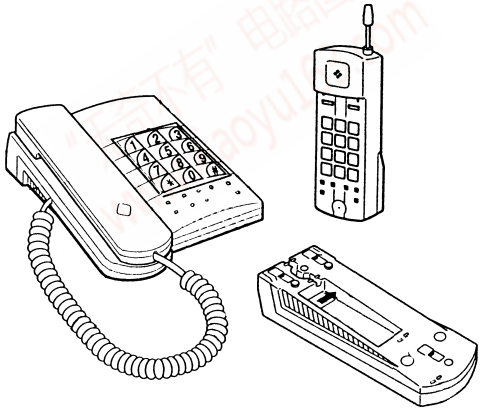
http://www.xiaoyu163.com

aiwa SERVICE

TN-F205 AEZ



SERVICE MANUAL

CORDLESS TELEPHONE

This Service Manual is the "Revision Publishing" and replaces "Simple Manual" (S/M Code No. 09-99A-335-8T1).

aiwa

S/M Code No. 09-99A-335-8R1

REVISION DATA

http://www.xiaoyu163.com

http://www.xiaoyu163.com

SPECIFICATIONS

OPERATING FREQUENCIES

	BASE	HANDSET
TRANSMIT FREQUENCY	31MHz	40MHz
RECEIVE FREQUENCY	40MHz	31MHz

GENERAL

Pulse Mode Dialing Rate	10 PPS
Pause Entry Delay	3 Seconds
R (flash)	100 ms
Redial Memory Capacity	32 Digits
Power Requirements	
BASE	230V AC, 9V DC
CHARGER	230VAC, 12VDC
HANDSET	3.6V DC (Nickel-Cadmium Battery)
Weight	
BASE	548 g (19.2 oz.)
HANDSET (Battery not included)	130 g (4.6 oz.)
CHARGER	96 g (3.4 oz.)
Measurements	
BASE	150 (W) × 192 (D) × 63.6 (H) mm
(Antenna not included)	(6 × 7 5/8 × 2 5/8 in.)
Antenna length	382 mm (15 1/8 in.)
HANDSET	52 (W) × 162 (D) × 31.2 (H) mm
(Antenna not included)	(2 1/8 × 6 1/2 × 1 1/4 in.)
Antenna length	101 mm (4 in.)
CHARGER	64 (W) × 181.6 (D) × 42.35 (H) mm
	(2 5/8 × 7 1/4 × 1 11/16 in.)
Battery Life (HANDSET)	Standby: 10 days Talk: 7 hours
Frequency	31/40 MHz
Modulation	FM
Security Code	65K Random

- Design and specifications are subject to change without notice.

ACCESSORIES/PACKAGE LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
⚠ 1	S0-112-290-000		APA-EI35EN 230V 12VDC
⚠ 2	S0-109-090-000		APA-EI35EN 230V 9VDC
3	S8-PCD-910-820		INSTRUCTION BOOK(TN-F205AEZ1-E
3	S8-PCD-910-920		INSTRUCTION BOOK(TN-F205AEZ1-S
4	S4-360-070-000		BATT IN-CD 3.6V

http://www.xiaoyu163.com

http://www.xiaoyu163.com

ELECTRICAL MAIN PARTS LIST

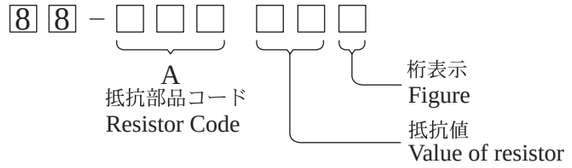
DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC			
	88-PCD-605-010		IC,TB31224F
	S8-331-000-000		IC,TA31002P/H31002P/HA31002P
	S0-106-201-034		IC,TEA1062
	S2-309-024-040		IC,LTV817
	S0-391-340-010		IC,W91340N
	87-A21-136-040		IC,AT24C01A-10SC 8P
	87-A20-751-010		IC,L7805CV
	S9-570-290-000		IC,KIA7029F
TRANSISTOR			
	SA-039-040-000		C-TR,MMBT3904
	S3-146-319-525		TR,KTC3195Y
	S8-009-200-010		TR,KSP92
	S8-004-200-000		TR,KSP42
	89-327-143-010		C-TR,2SC2714Y
	S8-004-300-000		TR,KSP43
	SA-039-060-010		TR,SST3906
	SA-010-372-000		TR,2SA1037AKQ
	SA-038-800-250		TR,KTC3880Y
DIODE			
	87-A40-226-080		DIODE,SVC251SPA
	87-017-781-080		RECTIFIER IN-4004
	S0-102-701-220		ZENER,27V 1/2W BZX55-C27 SEMTE
	S0-100-821-240		ZENER,8.2V 1/2W BZX55-C8V2 SEM
	87-A40-587-080		ZENER,BZX55-C5V1 5.1V
	82-135-799-010		DIODE,IN4148
	S0-100-331-220		ZENER,3.3V 1/2W BZX55-C3V3 SEM
	S0-100-561-230		ZENER,BZX55-C5V6 5.6V
	S0-100-621-210		ZENER,BZX55-C6V2 6.2V
MAIN C.B			
C47	S0-471-100-3K0		CAP,CER 470PF-3000V
C65	87-010-545-010		CAP,E 0.22-50V
C76	87-010-546-080		CAP,E 0.33-50V
C106	87-010-546-080		CAP,E 0.33-50V
C118	S1-474-112-500		CAP,M 0.47-250V
C132	87-010-053-810		CAP,E 1-50V
C142	S0-471-115-000		CAP,CER 470PF-/500
C143	S0-471-115-000		CAP,CER 470PF-/500
CON2	S2-101-302-000		CONN,21P 2.0MM
DX1	S3-001-640-000		DUPLEXER 31/40MHZ
IFT1	S0-039-300-070		IFT KY393N
IFT2	S0-075-600-070		IFT,7MM 455KHZ
IFT3	S0-008-450-070		IFT,KY845R
IFT4	S0-039-200-070		IFT KY392N
IFT5	S0-039-400-070		IFT KY394N
J2	S0-022-020-000		JACK,TEL MINI L/P 6P2C
J3	S1-004-700-040		POWER JACK DC HEC0470-01-250
L1	87-003-133-010		INDUCTOR,0.22UH
L2	87-005-166-010		INDUCTOR,1.2UH
L3	87-005-189-080		INDUCTOR,2.7UH
L4	8Z-PC6-636-080		INDUCTOR,2.2UH
L6	87-003-139-080		INDUCTOR,0.56UH
L7	87-005-696-080		COIL,100UH
L9	87-005-696-080		COIL,100UH
L10	87-003-097-010		COIL,1UH
L11	87-003-097-010		COIL,1UH
L12	87-003-097-010		COIL,1UH
L13	87-003-097-010		COIL,1UH
L14	87-005-696-080		COIL,100UH
L15	87-005-696-080		COIL,100UH
L16	87-005-696-080		COIL,100UH
R40	S0-222-500-120		RES,2.2K-1/2W
SW1	S2-201-220-000		SW,HOOK 2P2T
SW2	S2-200-000-040		SW,SLIDE 2P2T
SW3	S1-300-001-000		SW,SLIDE 1P3T
T1	S0-004-500-180		CER,FILTER LTW33-450E
VAR1	S3-300-700-000		VARISTOR SAS-331KD07 330V
VR1	S1-030-850-000		SFR,10K
VR3	S1-030-850-000		SFR,10K
X1	S6-111-504-000		X'TAL,11.15MHz HC49/U
X2	S0-001-070-010		CER,FILTER
X3	S6-003-580-010		CER,RESO CSA3.58MG
KEY C.B			
LED5	87-070-106-010		LED,SE3001 RED
LED6	87-070-106-010		LED,SE3001 RED
LED7	87-070-106-010		LED,SE3001 RED
HS-RF C.B			
C12	87-010-075-040		CAP,E 10-16V
C15	87-010-380-010		CAP,E 47-16V
C16	87-015-696-080		CAP,E 2.2-50V
C19	87-010-545-010		CAP,E 0.22-50V
C24	87-010-075-040		CAP,E 10-16V
C30	87-015-696-080		CAP,E 2.2-50V
C33	87-010-380-010		CAP,E 47-16V
C65	87-010-400-010		CAP,E 0.47-50V
C85	87-010-380-010		CAP,E 47-16V
C87	87-010-264-040		CAP,E 100-10V
DX1	S3-001-650-000		DUPLEXER 31/40MHZ
IFT1	S0-002-860-070		IFT,KL286N
IFT2	S0-075-600-070		IFT,7MM 455KHZ
IFT3	S0-002-760-070		IFT,KL276N
IFT4	S0-002-741-070		IFT,KL274N
IFT5	S0-002-770-070		IFT,KL277N
J1	S0-200-2P1-500		HEADER KINDTECH 15P
L1	87-003-106-010		INDUCTOR,0.33UH
L2	87-005-166-010		INDUCTOR,1.2UH
L3	87-005-674-080		INDUCTOR,1.5UH
L4	S0-100-152-010		INDUCTOR,10UH
L5	87-003-133-010		INDUCTOR,0.22UH
T1	S0-004-500-180		CER,FILTER LTW33-450E
VR1	S1-030-850-000		SFR,10K
VR3	S1-030-850-000		SFR,10K
X1	S6-111-501-000		X'TAL,11.15MHZ
X2	S0-001-070-010		CER,FILTER
X3	S3-327-681-000		X'TAL,32.768KHZ
HAND KEY C.B			
B1	SB-2BE-HA0-200		HEADER JST 2PIN
L1	87-003-150-080		INDUCTOR 68UH
L2	87-003-150-080		INDUCTOR 68UH
LED1	S0-321-610-010		C-LED,3.2-1.6(RED)
LED2	S0-321-610-010		C-LED,3.2-1.6(RED)
LED3	S0-049-410-030		LED,3MM(GRN)
LED4	S0-049-410-030		LED,3MM(GRN)
LED5	S0-049-410-030		LED,3MM(GRN)
LED6	S0-049-410-030		LED,3MM(GRN)
LED C.B			
LED901	87-070-106-010		LED,SE3001 RED
CHG C.B			
J901	S1-004-700-020		JACK,POWER DC470/MSC
R902	S0-271-500-010		RES,270-1W
BU-SP C.B			

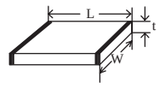
- Regarding connectors, they are not stocked as they are not the initial order items.
  The connectors are available after they are supplied from connector manufacturers upon the order is received.

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち
Chip Resistor Part Coding



チップ抵抗
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm) 外形／Form	L	W	t	抵抗コード : A Resistor Code : A
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

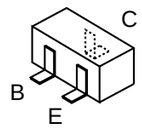
TRANSISTOR ILLUSTRATION

E C B

2SC2714
KTC3195

E B C

KSP42
KSP43
KSP92



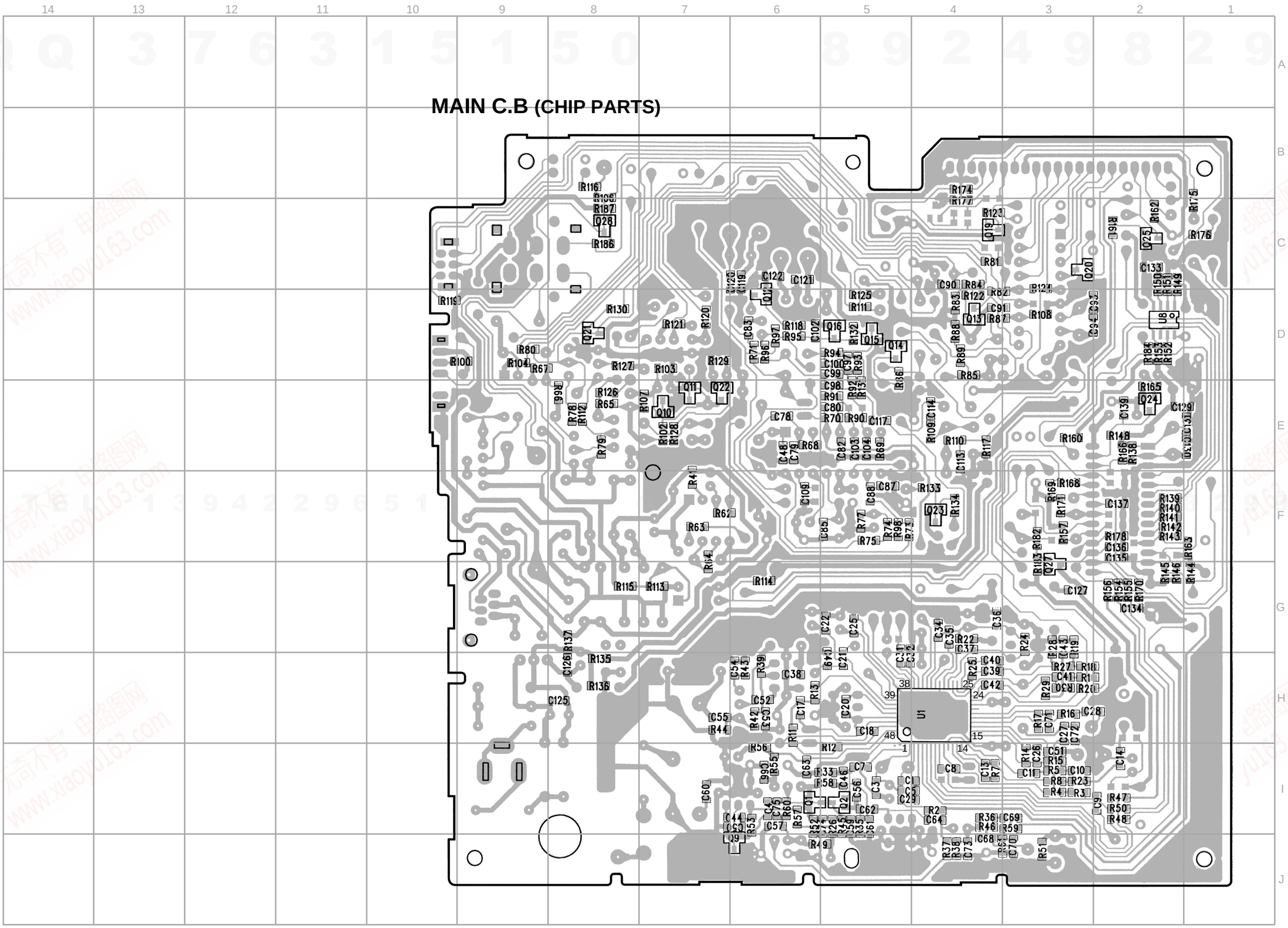
2SA1037
KTC3880
MMBT3904
SST3906

http://www.xiaoyu163.com

http://www.xiaoyu163.com

WIRING-1 (BU MAIN)

MAIN C.B (CHIP PARTS)

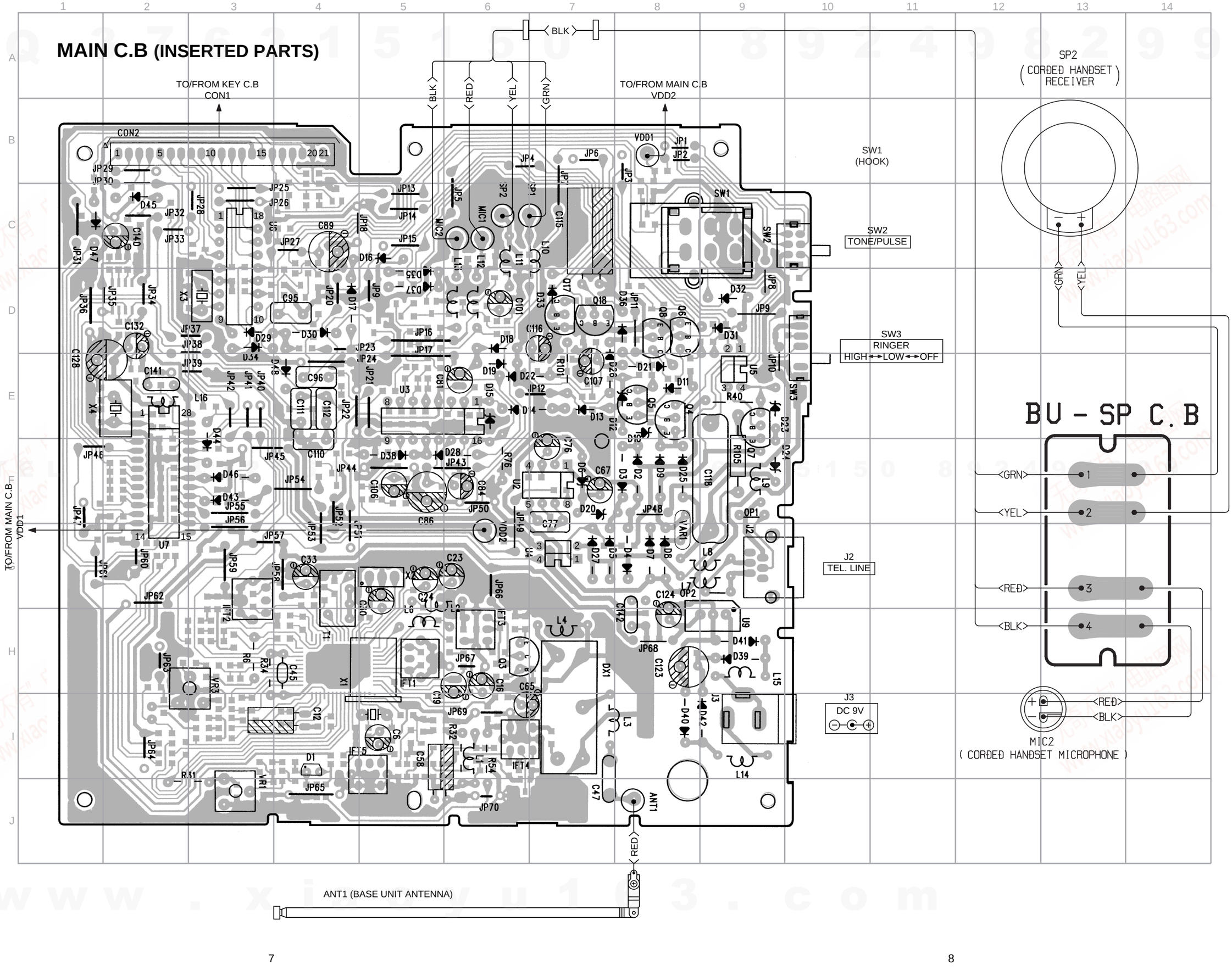


www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

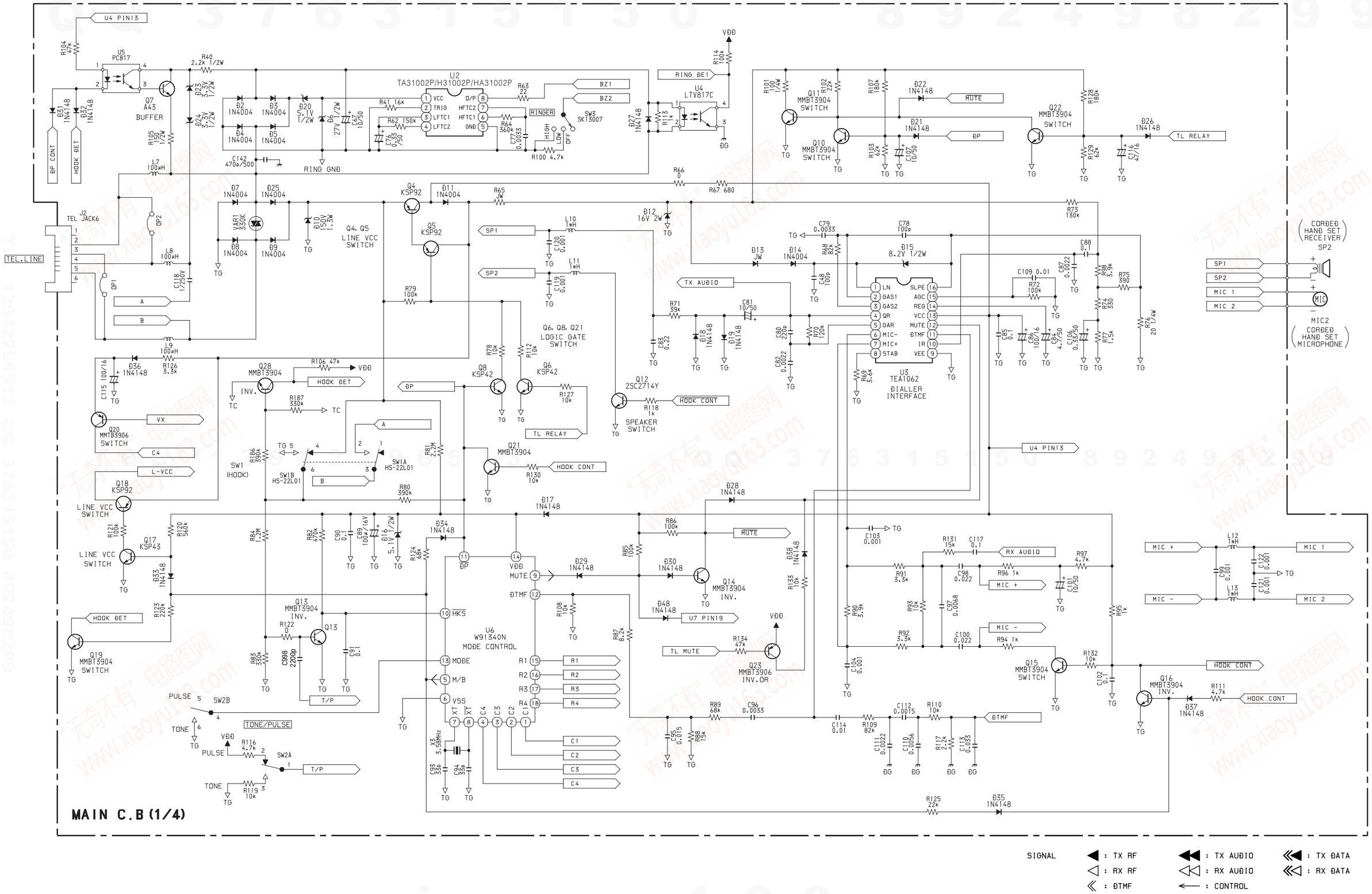
MAIN C.B (INSERTED PARTS)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

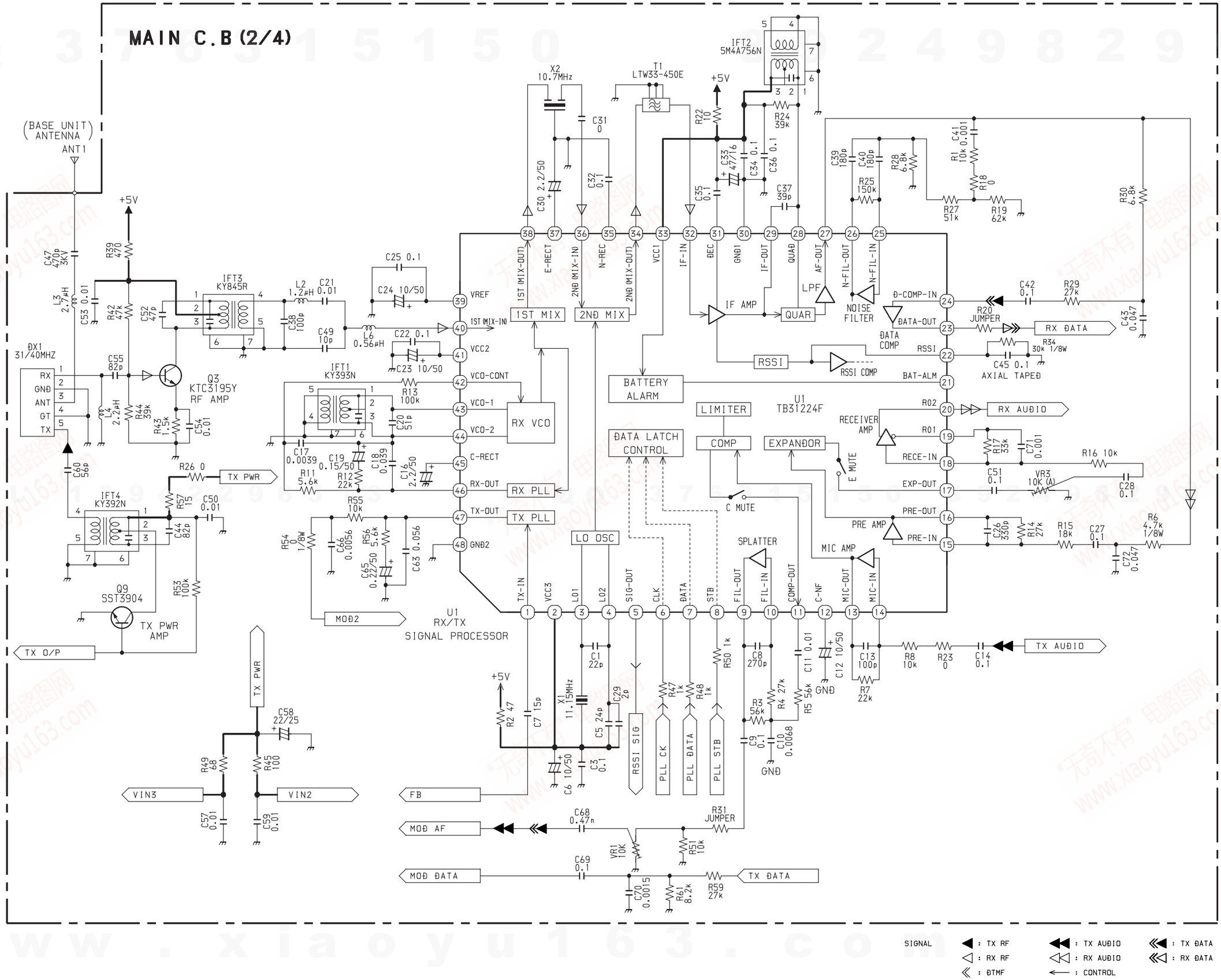
SCHEMATIC DIAGRAM-1 (MAIN 1/4)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

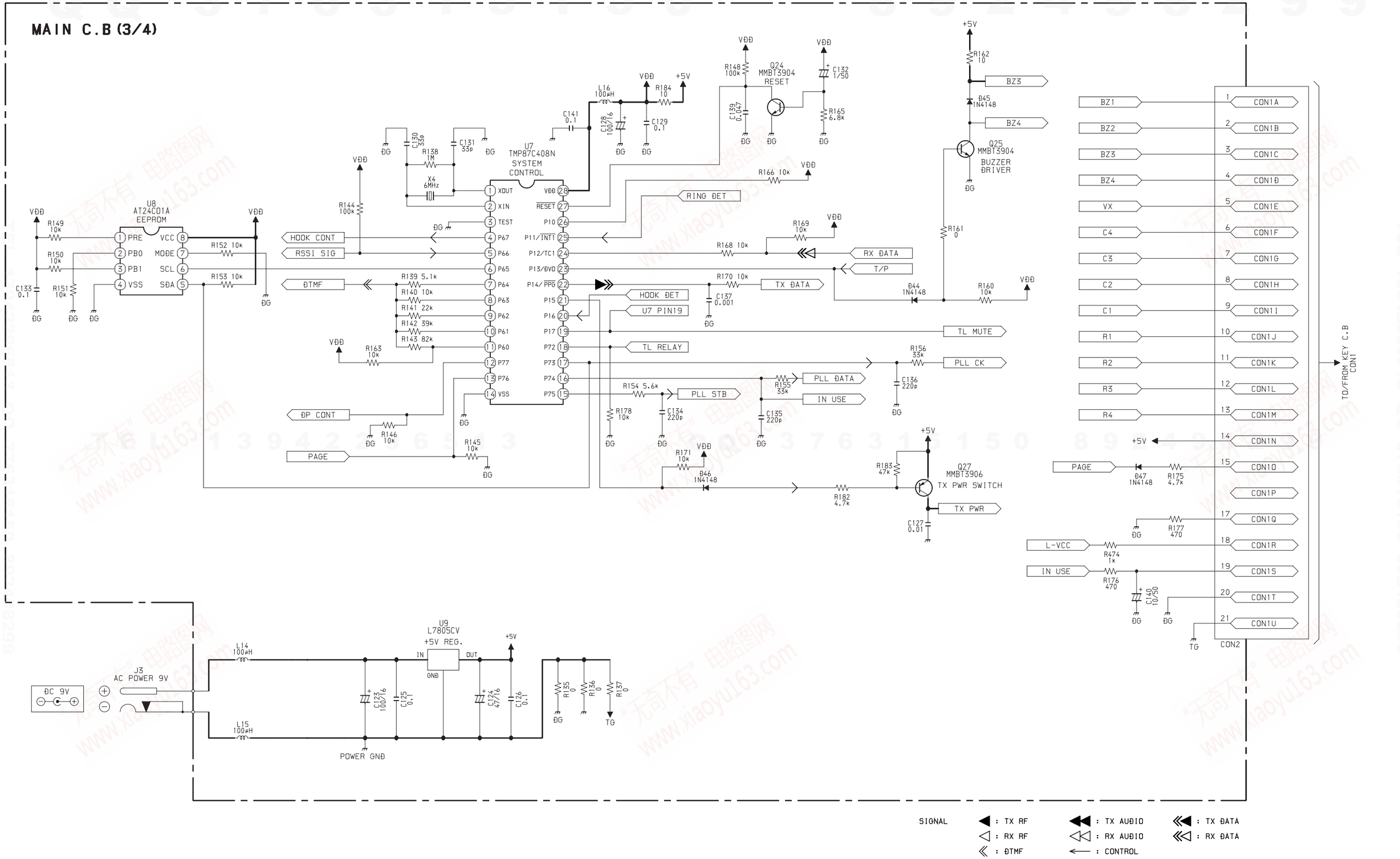
SCHEMATIC DIAGRAM-2 (MAIN 2/4)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

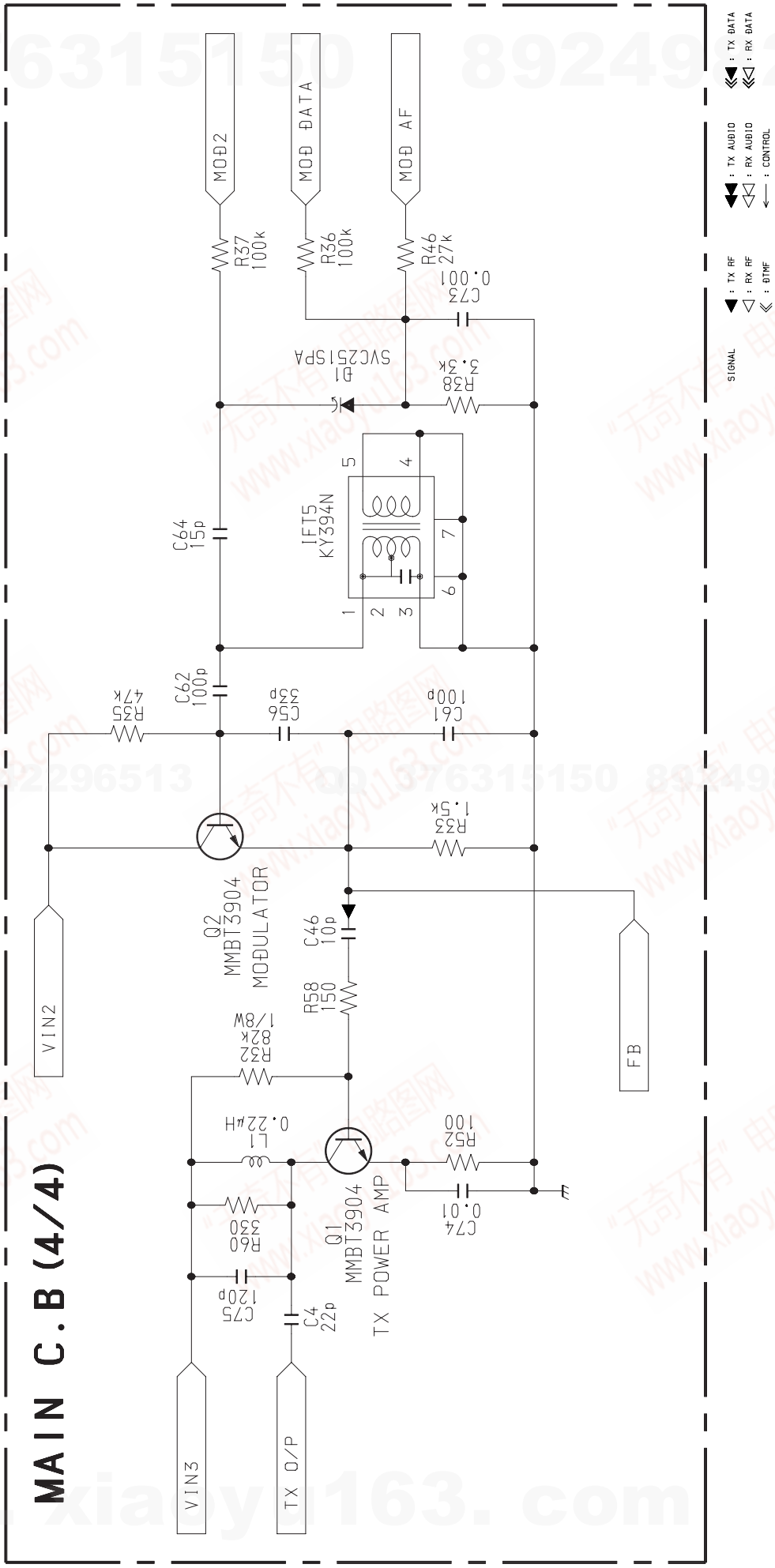
SCHEMATIC DIAGRAM-3 (MAIN 3/4)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

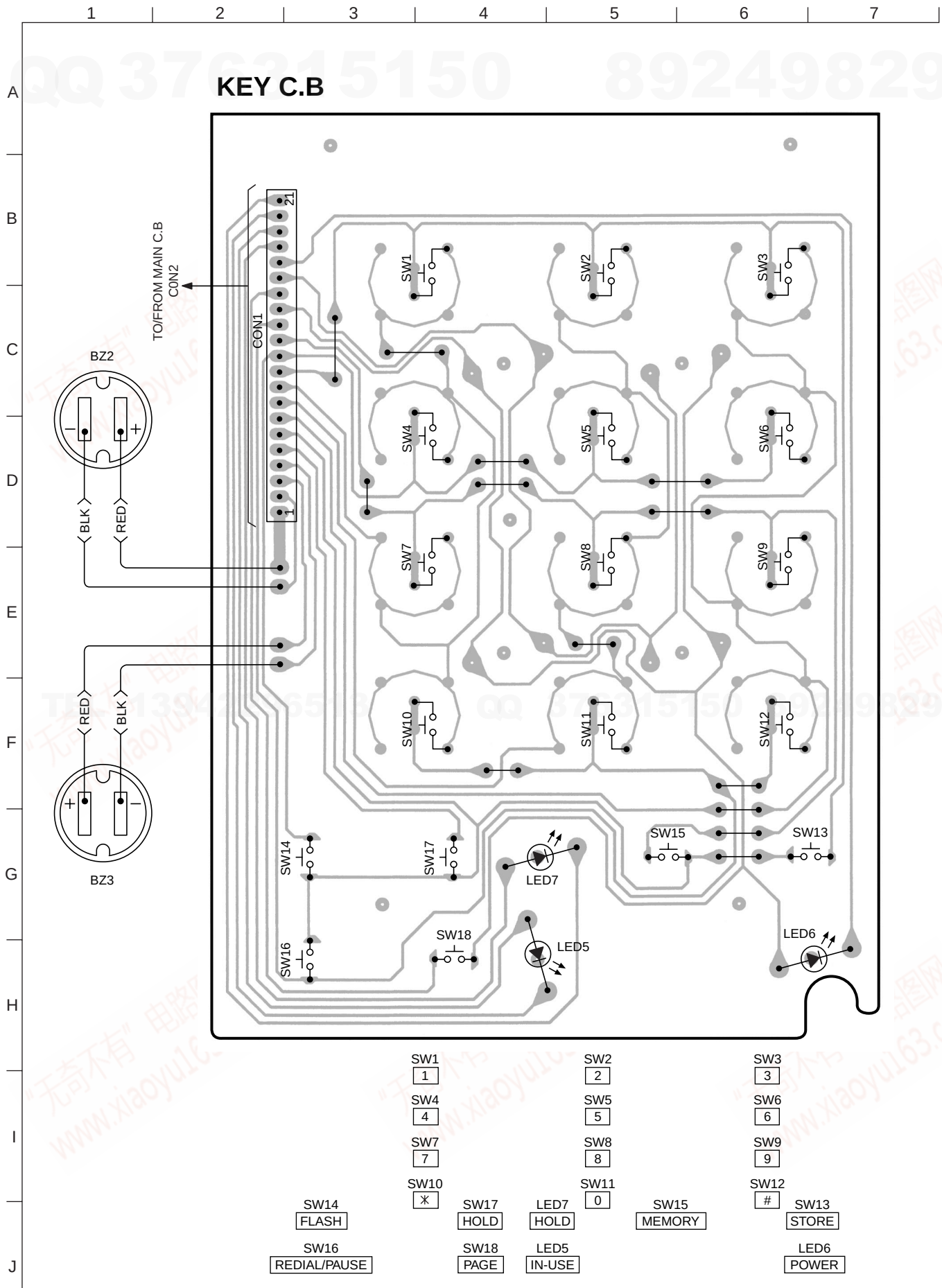
SCHEMATIC DIAGRAM-4 (MAIN 4/4)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

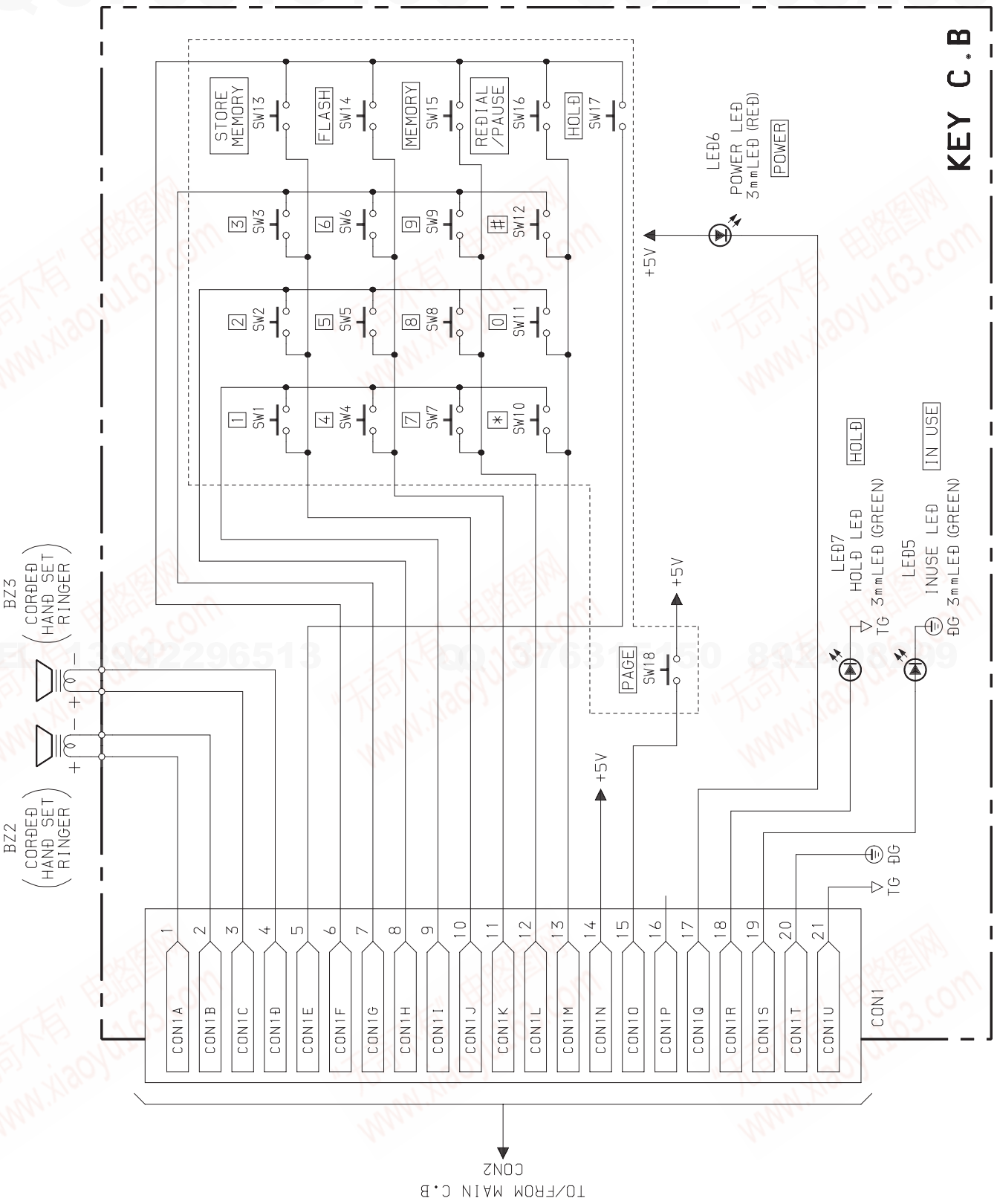
WIRING-2 (KEY)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

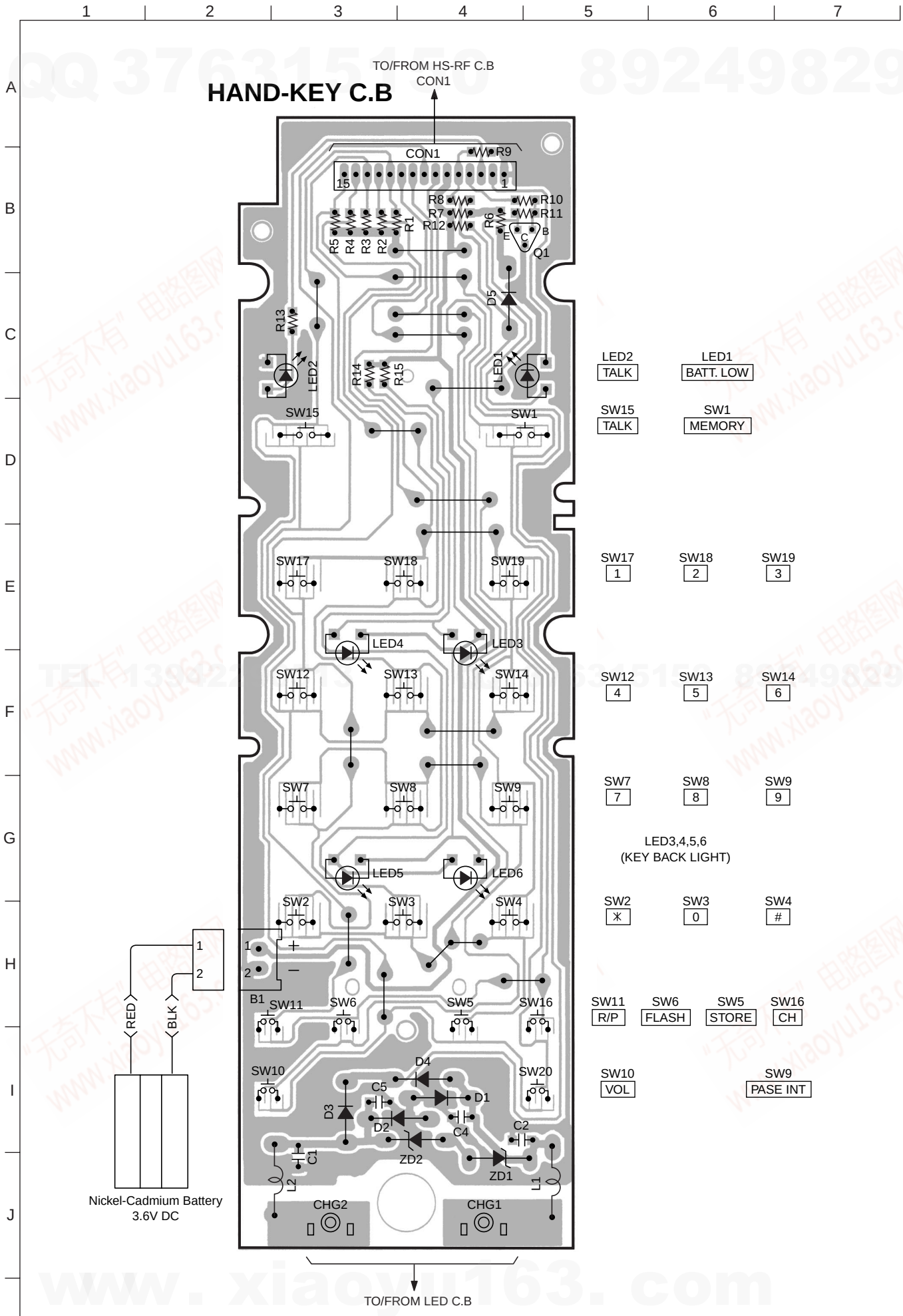
SCHEMATIC DIAGRAM-5 (KEY)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

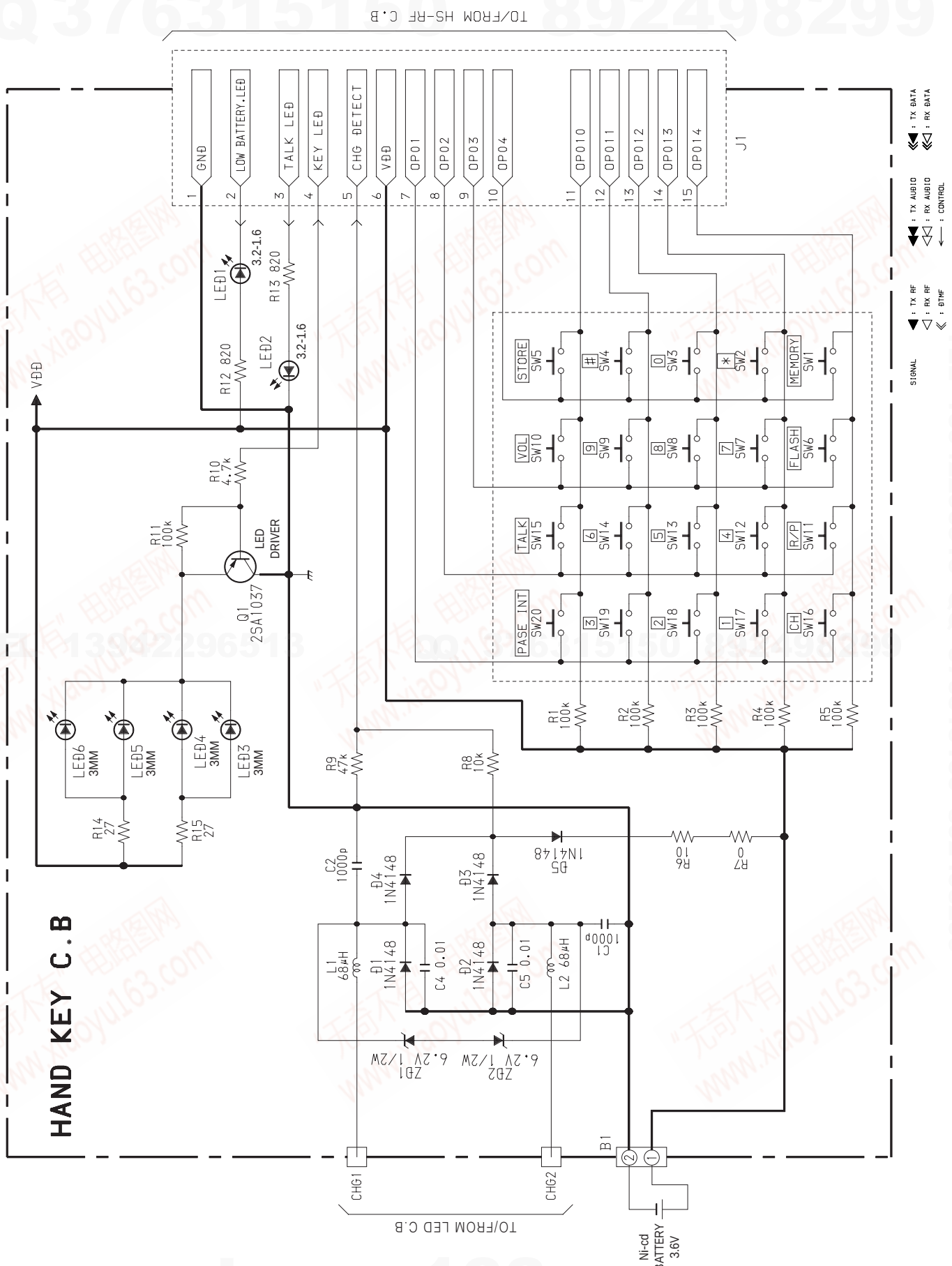
WIRING-3 (HAND KEY)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

SCHEMATIC DIAGRAM-6 (HAND KEY)

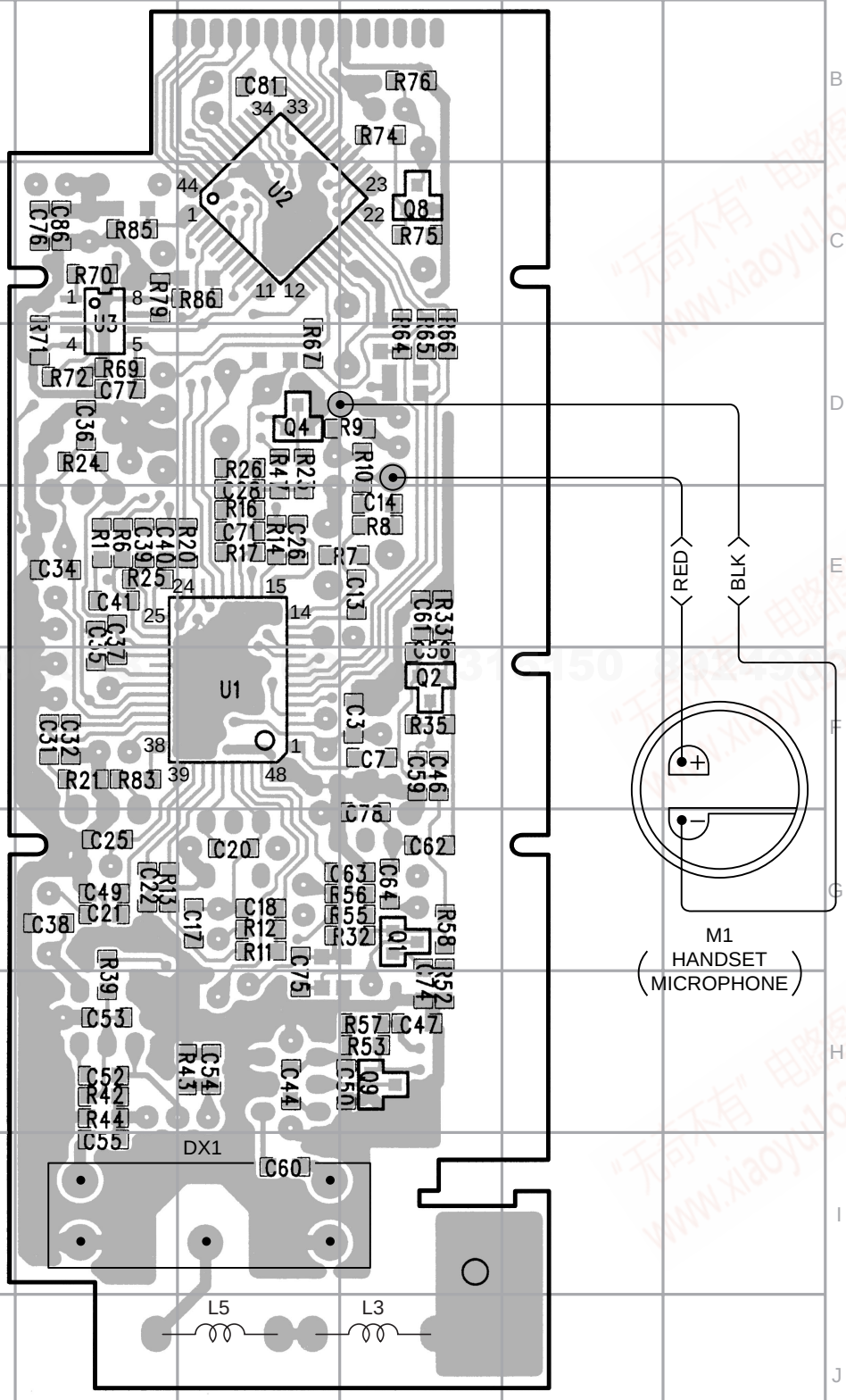


http://www.xiaoyu163.com

http://www.xiaoyu163.com

WIRING-4 (HS-RF: COMPONENT)

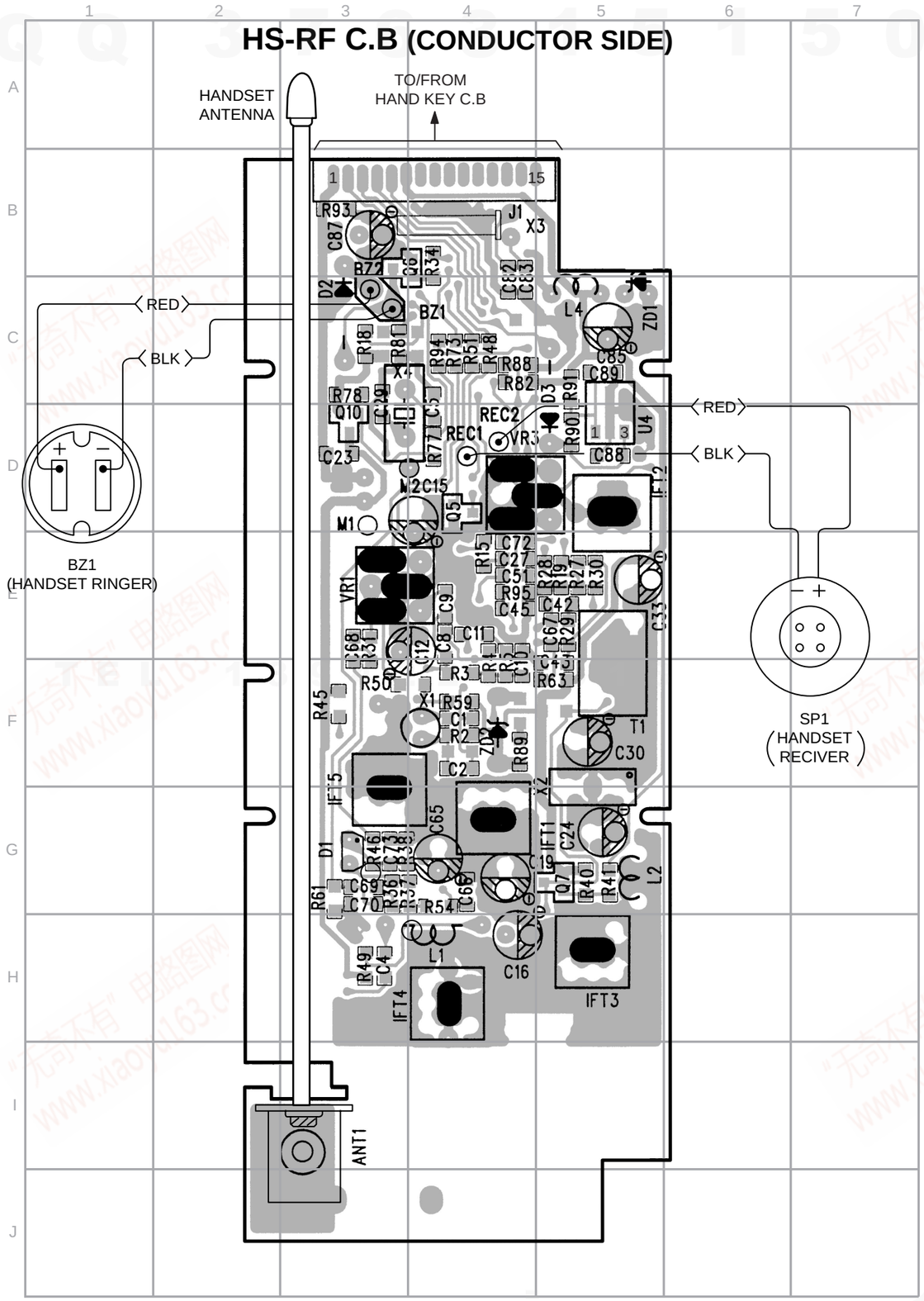
HS-RF C.B (COMPONENT SIDE)



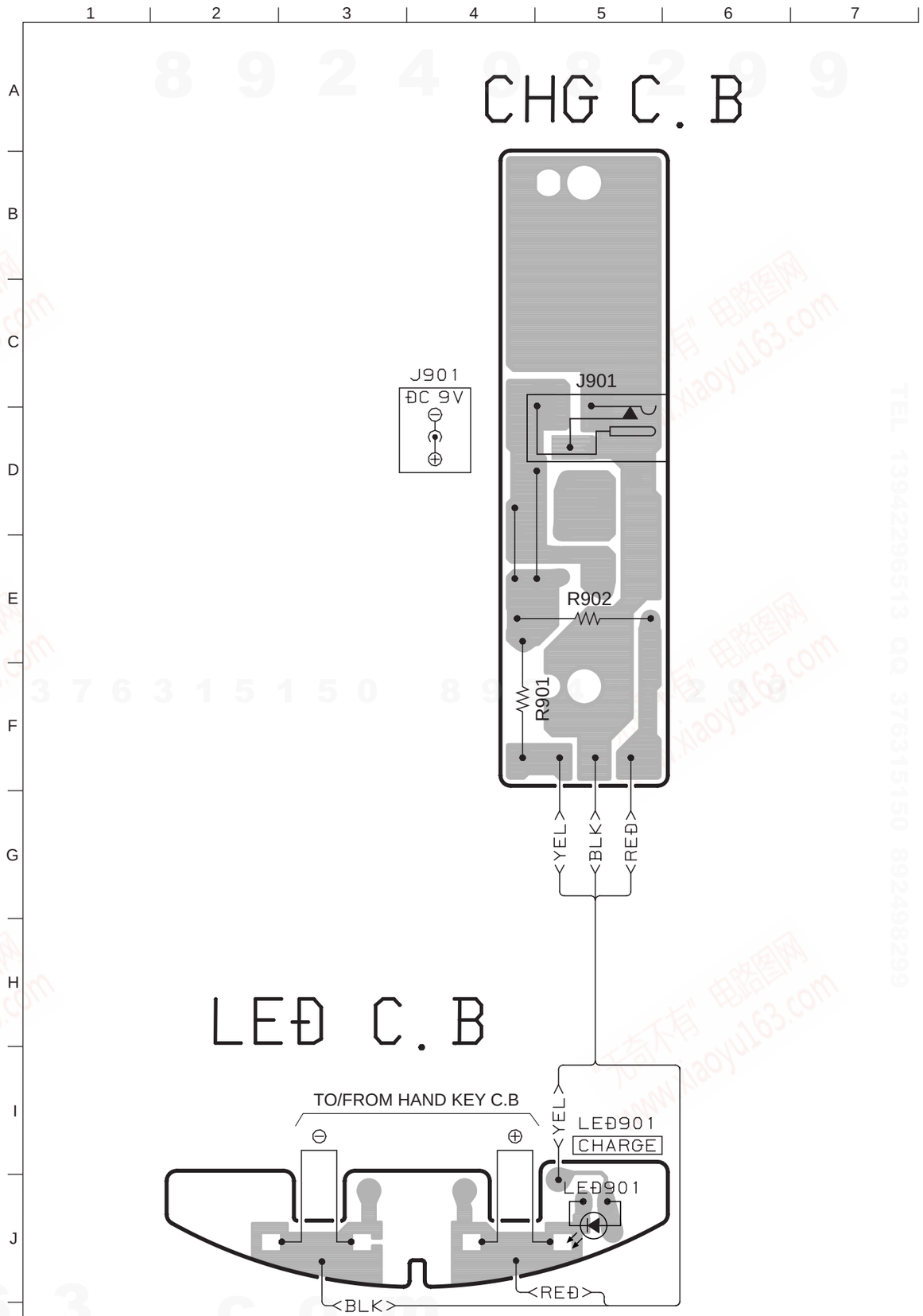
http://www.xiaoyu163.com

http://www.xiaoyu163.com

WIRING-5 (HS-RF: CONDUCTOR)



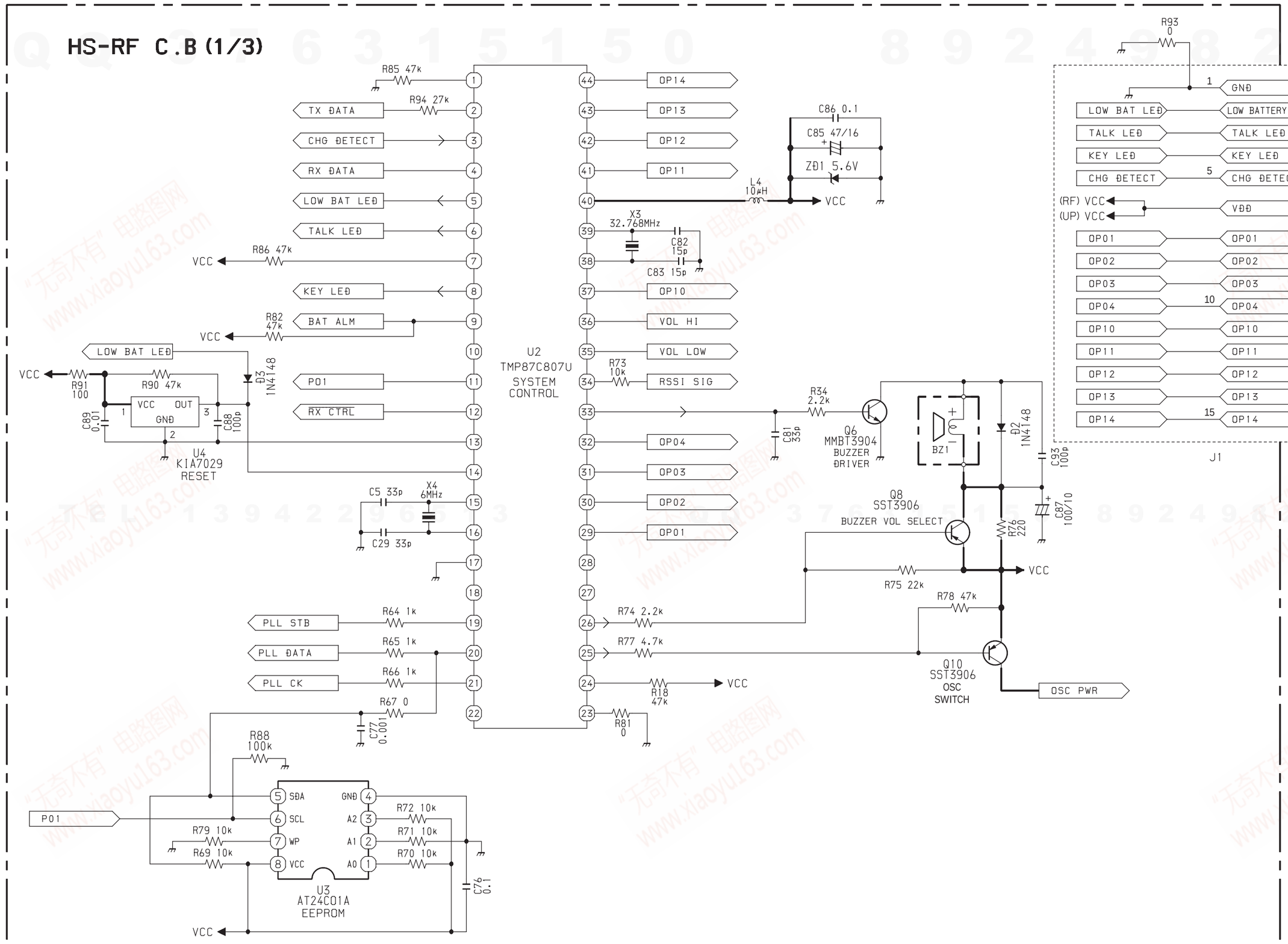
WIRING-6 (CHG/LED)



http://www.xiaoyu163.com

http://www.xiaoyu163.com

SCHEMATIC DIAGRAM-7 (HS-RF 1/3)

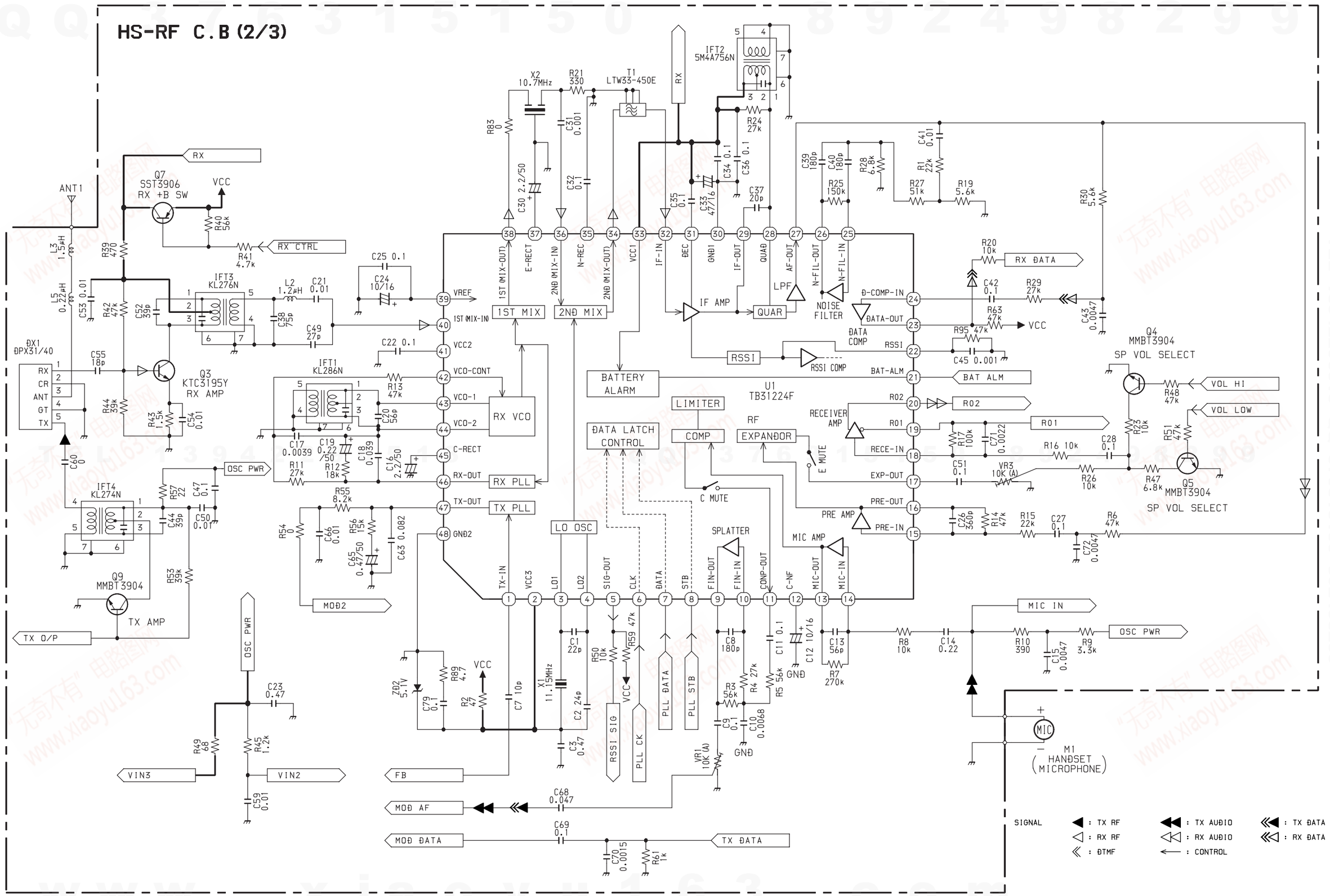


SIGNAL
: TX RF
: RX RF
: ĐTMF
: TX AUĐIO
: RX AUĐIO
: CONTROL
: TX ĐATA
: RX ĐATA

http://www.xiaoyu163.com

http://www.xiaoyu163.com

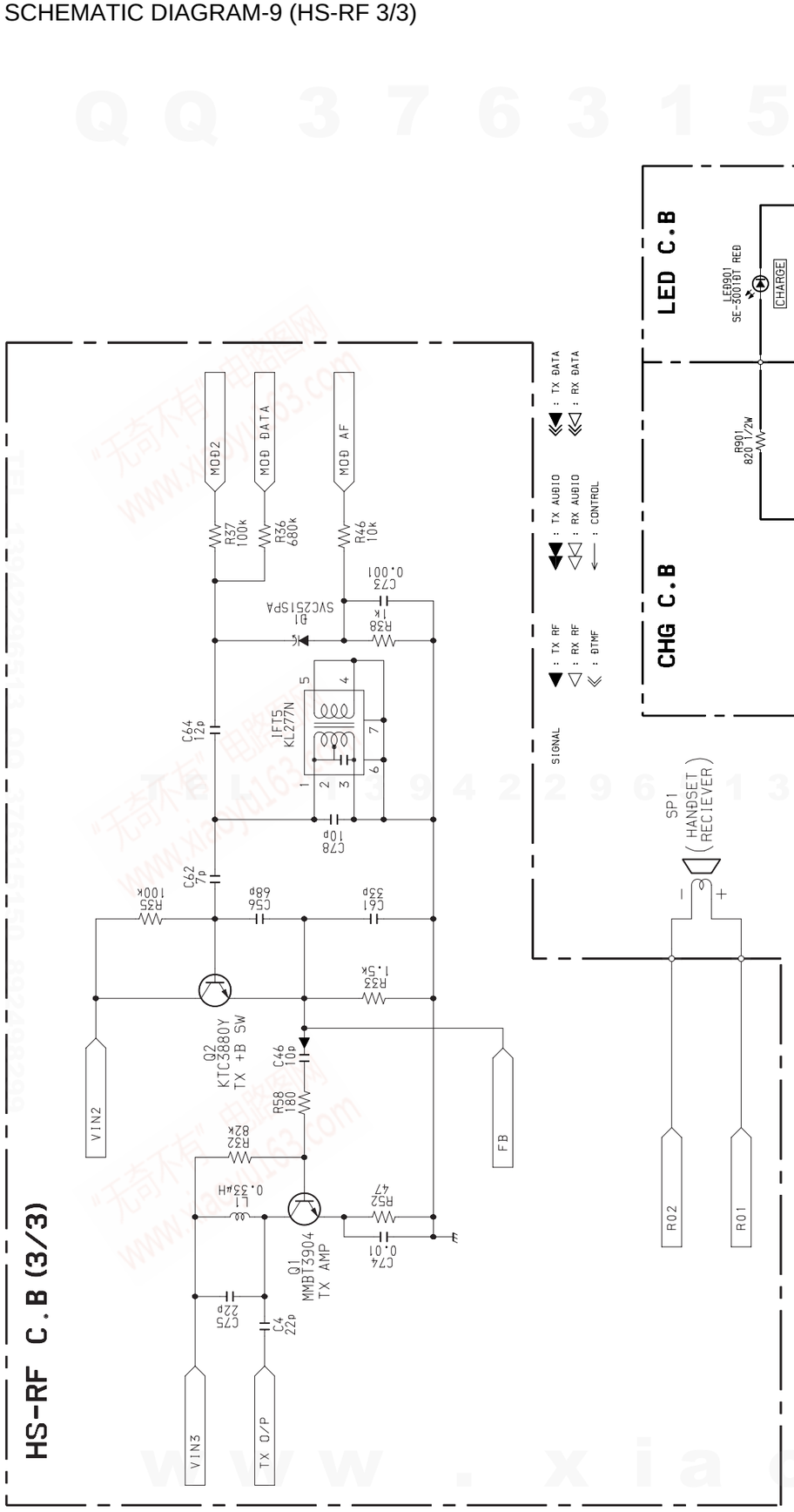
SCHEMATIC DIAGRAM-8 (HS-RF 2/3)



http://www.xiaoyu163.com

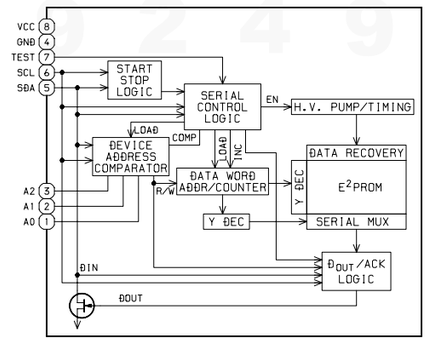
http://www.xiaoyu163.com

SCHEMATIC DIAGRAM-9 (HS-RF 3/3)

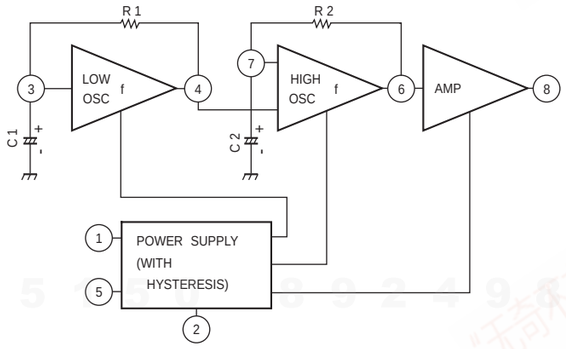


IC BLOCK DIAGRAM

IC, AT24C01A-10SC

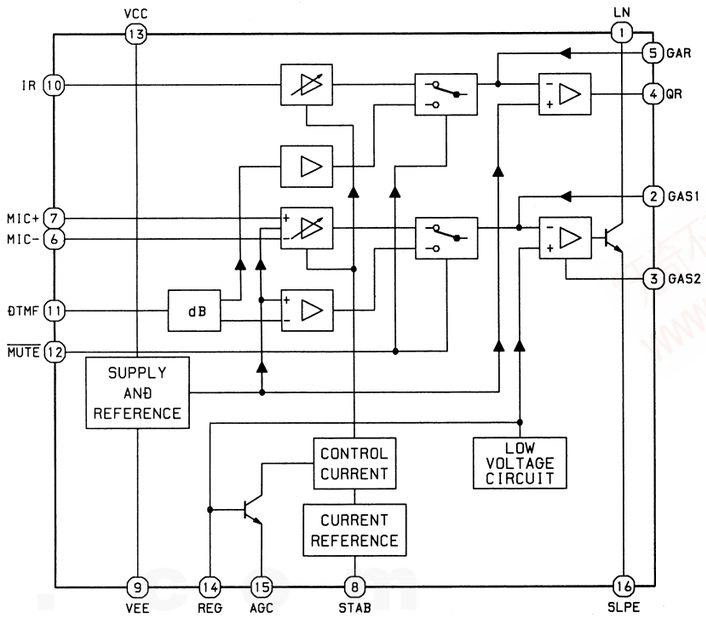


IC, TA31002P/H31002P/HA31002P



Note: R1, R2, C1 and C2 are parts externally mounted.

IC, TEA1062



http://www.xiaoyu163.com

http://www.xiaoyu163.com

IC DESCRIPTION

IC, TMP87C408N (BASE UNIT)

Pin No.	Pin Name	I/O	Description
1	XOUT	O	Oscillator out
2	XIN	I	Oscillator in
3	TEST	I	Tied low
4	HOOK CONT SPK MUTE	O	Hook control output (for corded phone): 0 = OFF HOOK, 1 = ON HOOK For ZPC-6: this pin is used as Speaker Amp, IC Mute Control) (the Mic Mute control is controlled by hardware: unmute mic when Speaker is unmute and charge not detected)
5	SIG OUT	I	Received Signal Strength Indicator: (TB31224F SIG OUT pin) 0 = carrier present, 1 = carrier absent NOISE DETECT 0 = Rx unlock, 1 = Rx lock Rx LOCK DETECT 0 = Tx unlock, 1 = Tx lock Tx LOCK DETECT
6	CHAG DET CLK EEPROM	I/O	Charge detect: 0 = charging, 1 = not charging. Clock of EEPROM
7	DTMF4	O	DTMF data pin 4 (Most Significant Bit)
8-10	DTMF3-DTMF1	O	DTMF data pin 3-1
11	DTMF0 COUNTRY S2	I/O	DTMF data pin 0 (Least Significant Bit) Country option select 2.
12	RING OFF COUNTRY S1	I/O	Control the shunt resistor: 1 = shunt a resistor (For U, K ONLY) Country option select 1
13	PAGE KEY	I	PAGE key: 1 = PAGE ON, 0 = STANDBY
14	GND	—	Ground
15	PLL STB	O	Combo chip strobe signal (TB31224F)
16	PLL DATA U LED	O	Combo chip data signal (TB31224F). In-use LED: 1 = ON, 0 = OFF.
17	PLL CK DO EEPROM DI EEPROM	I/O	Combo chip clk signal (TB31224F). Data Input/Output of EEPROM.
18	TL RELAY	O	Line seize: 1 = line seize, 0 = off-hook
19	TL MUTE M B SEL	I/O	Telephone Line Mute Control: 1 = MUTE. Make/Break Ratio Select 1 = 33.3%, 0 = 40%
20	HOOK DET	I	Hook detect input (for Corded Phone). 1 = ON HOOK, 0 = OFF HOOK REMARK: this pin is always PULL-HIGH for ZPC-7 or ZPC-6 (I. e. just imagine Corded phone is Always ON HOOK)
21	TX PWR SCRET OPT	I/O	Tx power control: 0 = ON, 1 = OFF. Secret function option: 1 = YES, 0 = NO REMARK: this PULL LOW for ZPC-7 or ZPC-6 (I. e. Secret opt is DISABLED)
22	TX DATA	O	Transmit data output
23	BUZZER T P SEL	I/O	Buzzer signal (key tone and paging sound ONLY) Tone/Pulse selection: 1 = Pulse, 0 = Tone
24	RX DATA	I	Received data input
25	RING DET	I	Ring detect input: 1 = OFF, 0 = RING COME (MC34012)
26	BAND SQ SELECTION	I/O	Shunt capacitor for U.S. Frequency Higher Band: 1 = shunt Cap, OUT OF RANGE FUNCTION: 1 = YES, 0 = NO
27	$\overline{\text{RESET}}$	I	Normally High, Low to reset MCU
28	POWER	—	Power (VCC)

http://www.xiaoyu163.com

http://www.xiaoyu163.com

IC, W91340N

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1-4</td><td>C1-C4</td><td>I</td><td>The keyboard inputs may be used with either a standard 5 x 4 keyboard or an inexpensive single contact (Form A) keyboard. Electronic input from a µC can also be used. A valid key is defined as a single row being connected to a single column.</td></tr>
<tr><td>5</td><td>H/P MUTE</td><td>O</td><td>The H/P MUTE is a conventional inverter output. During pulse dialing, flash break or hold period, this output is active high; otherwise, it remains in low state.</td></tr>
<tr><td>6</td><td>VSS</td><td>—</td><td>Power input pins.</td></tr>
<tr><td>7, 8</td><td>XT, $\overline{XT}$</td><td>I/O</td><td>A built-in inverter provides oscillation with an inexpensive 3.579545 MHz crystal or ceramic resonator.</td></tr>
<tr><td>9</td><td>T/P $\overline{MUTE}$</td><td>O</td><td>The T/P $\overline{MUTE}$ is a conventional CMOS N-channel open drain output.
The output transistor is switched on during dialing sequence and flash break time.
Otherwise, it is switched off.</td></tr>
<tr><td>10</td><td>$\overline{HKS}$</td><td>I</td><td>Hook switch input.
$\overline{HKS}$ = VDD: On-hook state. Chip in sleeping mode, no operation.
$\overline{HKS}$ = VSS: Off-hook state. Chip is enabled for normal operation.
$\overline{HKS}$ pin is pulled to VDD by an internal resistor.</td></tr>
<tr><td>11</td><td>$\overline{DP}$</td><td>O</td><td>N-channel open drain dialing pulse output. Flash key will cause $\overline{DP}$ to be active in either tone mode or pulse mode.</td></tr>
<tr><td>12</td><td>DTMF</td><td>O</td><td>In pulse mode, this pin remains in low state at all times. In the tone mode, it will output a dual or single tone.
<table>
<tr><th colspan="4">Output Frequency</th></tr>
<tr><th></th><th>Specified</th><th>Actual</th><th>Error %</th></tr>
<tr><td>R1</td><td>697</td><td>699</td><td>+ 0.28</td></tr>
<tr><td>R2</td><td>770</td><td>766</td><td>- 0.52</td></tr>
<tr><td>R3</td><td>852</td><td>848</td><td>- 0.47</td></tr>
<tr><td>R4</td><td>941</td><td>948</td><td>+ 0.74</td></tr>
<tr><td>C1</td><td>1209</td><td>1216</td><td>+ 0.57</td></tr>
<tr><td>C2</td><td>1336</td><td>1332</td><td>- 0.30</td></tr>
<tr><td>C3</td><td>1477</td><td>1472</td><td>- 0.34</td></tr>
</table></td></tr>
<tr><td>13</td><td>MODE</td><td>I</td><td>Pulling mode pin to VSS places the dialer in tone mode. Pulling mode pin to VDD places the dialer in pulse mode with M/B ratio of 40 : 60 (10 ppS, except for W91342N/W91342AN = 20ppS)
Floating mode pin places the dialer in pulse mode with M/B ratio of 33.3 : 66.7 (10 ppS, except for W91342N/W91342AN = 20 ppS.)</td></tr>
<tr><td>14</td><td>VDD</td><td>—</td><td>Power input pins.</td></tr>
<tr><td>15-18</td><td>R1-R4</td><td>I</td><td>The keyboard inputs may be used with either a standard 5 x 4 keyboard or an inexpensive single contact (Form A) keyboard. Electronic input from a µC can also be used. A valid key is defined as a single row being connected to a single column.</td></tr>
</table>

http://www.xiaoyu163.com

http://www.xiaoyu163.com

IC, TB31224F

Pin No.	Pin Name	I/O	Description
1	TX-IN	I	Input terminal of TX VCO oscillation signal.
2	VCC3	—	Power supply terminal.
3, 4	LO-1, LO-2	O	LOCAL OSCILLATOR input and output terminals. Colpitts oscillator is formed by internal emitter follower and external X'tal. And external injection is possible from pin 3.
5	SIG OUT	O	Output terminal of detection signal. It is the open drain output.
6	CLK	I	Input terminal of clock.
7	DATA	I	Input terminal of serial data.
8	STB	I	Input terminal of strobe signal.
			Input the serial data for controlling IC.
9	FIL-OUT	O	Output of FILTER AMP.
10	FIL-IN	I	Input of FILTER AMP.
11	COMP-OUT	O	Output of COMPRESSOR.
12	C-NF	—	Feedback circuit of T type is formed by external capacitor with SUM AMP.
13	MIC-OUT	O	Output of MIC AMP and connected directly to input of SUM AMP.
14	MIC-IN	I	Input terminal of MIC AMP.
15	PRE-IN	I	Inverted input of PRE AMP.
16	PRE-OUT	O	Output of PRE AMP. Connected directly to EXPANDER.
17	EXP-OUT	O	Output of SUM AMP at EXPANDER. The signal from gain cell is gained by inverted amp.
18	RECE-IN	I	Inverted input of RECEIVER AMP.
19	RO1	O	Receiving output for a dynamic receiver.
20	RO2	O	Used for BTL output type with RO1 terminal when a ceramic receiver is used.
21	BAT-ALM	O	BATTERY ALARM terminals. When VCC decrease VBAT-L, This terminal outputs "H" level. Detection voltage is controlled by data bit. This terminal is open collector output.
22	RSS1	O	This terminal outputs DC level according to input signal level to IF AMP. Dynamic range is around 70dB.
23	DATA-OUT	O	Output terminal for wave form shaping. This terminal is open collector output.
24	D-COMP-IN	I	DATA COMPARATOR input terminal. This terminal input demodulation signal of DATA.
25	N FIL-IN	I	NOISE FILTER input and output terminals. BPF is composed of external capacitors and resistors. Connected internally to rectifier circuit by coupling capacitor.
26	N FIL-OUT	O	
27	AF-OUT	O	Demodulated signal output terminal. Carrier leak is small as LPF is built-in. Output impedance is around 360Ω.
28	QUAD	I	Phase shift signal input terminal of FM demodulator.
29	IF-OUT	O	Output terminal of IF AMP.
30	GND1	—	GND terminal.
31	DEC	I	2nd IF input and decoupling for bias. Input impedance is around 1.5kΩ.
32	IF-IN	I	
33	VCC1	—	Power supply terminal.
34	2ND MIX-OUT	O	MIX output terminal. Output impedance is around 1.5kΩ.

http://www.xiaoyu163.com

http://www.xiaoyu163.com

Pin No.	Pin Name	I/O	Description
35	N-REC	O	After output of NOISE FILTER amplified around 20dB, noise signal is rectified by external capacitor.
36	2ND MIX-IN	I	1st IF signal input terminal. Input impedance is around 4.7kΩ at 10.695MHz.
37	E-RECT	O	Connected capacitor for full-wave rectifier circuit of EXPANDER.
38	1ST MIX-OUT	O	MIX output terminals. Externally connects filters. Output impedance is 330Ω. (Typ.)
39	VREF	—	Reference terminal through internal buffer of compander block.
40	1ST MIX-IN	I	MIX input terminal. Double-balance MIX.
41	VCC2	—	Regulator terminal. Output voltage is 2.0V.
42	VCO-CONT	I	Voltage control terminal of RX-VCO.
43, 44	VCO-1, VCO-2	I	They are resonance terminals of RX-VCO.
45	C-RECT	—	Terminal for rectifier of COMPRESSOR. Almost the same circuit as E-RECT terminal.
46	RX-OUT	O	Output terminal of CHARGE PUMP. CHARGE PUMP is constant current output circuit, and output current is varied by input serial data.
47	TX-OUT	O	
48	GND2	—	GND terminal.

1. General description
   TB31224F is controlled by serial parts pin 6, 7, 8, and makes all situations by these serial bits for RF part in 46/49MHz cordless telephone such as intermittent receiving state.
   Not only 46/49MHz cordless telephone but CT0 cordless phone that has frequency spec. between about 20MHz and 60MHz can be also set up TB31224F.

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

IC, TMP87C807U (HS-RF)

Pin No.	Pin Name	I/O	Description
1	SQ SELECTION	I	OUT OF RANGE FUNCTION: 1 = YES, 0 = NO
2	TX DATA	O	Transmitted data
3	CHARGE DET	I	Charge detect: 1 = charging, 0 = not charging
4	RX DATA	I	Received data (INT3/TC3)
5	LB LED	O	Low battery led (High current port): 1 = ON
6	TALK LED	O	Talk led (High current port): 0 = ON
7	PC13 ZPC7	I	Power save mode. Hi: NO, Lo = YES
8	KEY LED	O	Keypad LED: 0 = ON
9	BATT ALARM	I	Battery low detect: 0 = battery ok, 1 = battery low (3.25 V). (Use COMBO chip TB31224F battery detect function)
10	N.C.	—	Not connected.
11	CLK EEPROM	O	Clock of EEPROM
12	RX PWR	O	Rx power control : 0 = ON, 1 = OFF.
13	TEST	—	Tied to low
14	$\overline{\text{RESET}}$	I	Normally High, low to reset MCU.
15	XIN	I	Resonator in (3.58 MHz)
16	XOUT	O	Resonator out (3.58 MHz)
17	GND	—	Ground
18	N.C.	—	Not connected.
19	PLL STB	O	Combo chip strobe signal input.
20	PLL DATA DI EEPROM DO EEPROM	I/O	Combo chip data signal input. Data input of EEPROM. Data output of EEPROM.
21	PLL CK	O	Combo chip clock signal output.
22	BAND	O	Shunt capacitor for U.S. frequency high band: 1 = shunt capacitor.
23, 24	COUNTRY S1, S2	I	Country channel table selection 1, 2.
25	TX PWR	O	TX power control : 0 = ON, 1 = OFF.
26	RING VOL	O	Ringer volume control
27, 28	N.C.	—	Not connected.
29-32	ROW0-ROW3	O	Keypad column output #0-#3
33	BUZZER OUT	O	Buzzer signal
34	SIG OUT	I	Received signal strength indicator: (TB31224F SIG OUT Pin) 0 = carrier present, 1 = carrier absent 0 = Rx unlock, 1 = Rx lock 0 = Tx unlock, 1 = Tx lock
35	VOL LO	O	Receiver volume control 1 (Lo)
36	VOL HI	O	Receiver volume control 2 (Hi)
37	FN COL	I	Function key column input (INT5)
38	XTIN	I	32.768 kHz crystal
39	XTOUT	O	32.768 kHz crystal
40	VDD	—	Power (VCC)
41-44	COL3-COL0	I	Keypad column input #0-#3

http://www.xiaoyu163.com

http://www.xiaoyu163.com

VOLTAGE CHART

< B/U-MAIN >

IC-U6 (DIALER)

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
1	3.5	0	2.8
2	3.5	0	2.8
3	3.5	0	2.8
4	3.5	0	2.8
5	0	0	0
6	0	0	0
7	0	0	0
8	3.5	3.5	2.8
9	0	1.2	1.1
10	0.4	0.1	2.8
11	3.4	0.6	0.03
12	0	0	0
13	0	0	0
14	3.5	3.5	2.8
15	3.5	3.5	2.8
16	3.5	3.5	2.8
17	3.5	3.5	2.8
18	3.5	3.5	2.8

IC-U2 (RINGER)

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
1	48	0	0
2	46.5	0	0
3	45.4	0	0
4	46.1	0	0
5	46.5	0	0
6	46.1	0	0
7	44.4	0	0
8	46.1	0	0

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

IC-U3 (SPEACH)

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
1	0	4.5	4.5
2	0.2	2	2
3	0.2	2	2
4	0.3	2	1.6
5	0.3	2	1.6
6	0.1	2	1.6
7	0.1	2	1.6
8	0	0.04	0.04
9	0	0	0
10	0.1	1.3	1.3
11	0.1	2	1.6
12	0.1	0	0
13	0	4	3.2
14	0	2	2
15	0	0.8	0.8
16	0	0.8	0.8

IC-U7 (MCU)

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
1	2.1	2.1	2.1
2	2.1	2.1	2.1
3	0	0	0
4	0.01	0.01	4.8
5	4.8	4.8	0.02
6	0.01	0.01	0.01
7	0.01	0.01	0.01
8	0.01	0.01	0.01
9	0.01	0.01	0.01
10	0.01	0.01	0.01
11	0.03	0.03	0.03
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0.03	0.03	4.2
17	0.05	0.05	0.03
18	0	0	4.8
19	4.8	4.8	4.8
20	4.8	0.1	4.8
21	4.8	4.8	0
22	0	0	0
23	0.2	0.2	0.2
24	2.2	2.2	0.04
25	4.8	4.8	4.8
26	4.8	4.8	4.8
27	4.8	4.8	4.8
28	4.8	4.8	4.8

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

IC-U1 (RF)

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
1	4.8	4.8	4.8
2	4.8	4.8	4.8
3	4.8	4.8	4.8
4	4.5	4.5	4.5
5	4.8	4.8	0.02
6	0.06	0.06	0.03
7	0.03	0.03	4.2
8	0	0	0
9	0.1	0.1	1.5
10	0.1	0.1	1.5
11	0.3	0.6	1.5
12	0.3	0.6	1.5
13	0.3	0.6	1.5
14	0.3	0.6	1.5
15	1.5	1.5	1.5
16	1.5	1.5	1.5
17	1.5	1.5	1.5
18	1.2	1.2	1.2
19	1.2	1.2	1.2
20	1.2	1.2	1.2
21	0	0	0
22	0.2	0.2	0.8
23	2.2	2.3	4.8
24	0.7	0.7	0.7
25	0.7	0.7	0.7
26	0.7	0.7	0.7
27	0.6	0.6	0.6
28	4.8	4.8	4.8
29	4	4	4
30	0	0	0
31	4.5	4.5	4.5
32	4.5	4.5	4.5
33	4.8	4.8	4.8
34	3.5	4.8	3.5
35	1.3	1.3	0.05
36	1	1	1
37	1.1	1.1	0.6
38	3.4	3.4	3.4
39	1.5	1.5	1.5
40	1	1	1
41	2	2	2
42	0.3	0.3	0.3
43	4.8	4.8	4.8
44	4.8	4.8	4.8
45	0.3	0.3	0.7
46	2.3	2.4	2.5
47	0.06	0.1	1.7
48	0	0	0

IC-U8 (EEPROM)

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
1	4.8	4.8	4.8
2	0	0	0
3	4.8	4.8	4.8
4	0	0	0
5	0.05	0.05	0.03
6	0.01	0.01	0.01
7	0	0	0
8	4.8	4.8	4.8

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

Q4

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	51	6.1	6
C	0.03	5.9	5.9
B	49	5.3	5.2

Q5

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	49	5.3	5.3
C	0	5.3	5.3
B	51	4.6	4.6

Q6

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	49	0.1	4.6
B	0	0.6	0.03

Q3

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	1.2	1.2	1.2
C	4.5	4.5	4.5
B	1.9	1.9	1.9

Q8

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	51	4.6	0.03
B	0	0	0.6

Q10

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	0.1	0.1
B	0	0.6	0.4

Q11

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	5.2	5.2
B	0	0.1	0.1

Q12

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	0.01	2.7
B	0	0.5	0.07

Q14

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	0.07	0.07
B	0.1	0.8	0.6

Q15

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	0.06	3.2
B	0	0.6	0.06

Q17

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0.6	4.6	4.6
B	0.3	0.3	0.3

Q18

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	5.2	5.1
C	0	1.6	1.5
B	0.4	4.7	4.6

Q19

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	4.8	0.1	4.8
B	0	0	0

Q20

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	3.6	5.1	5.1
C	3.5	0	2.8
B	3.1	4.1	4.1

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

Q21

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	0.6	0.03
B	0.01	0.01	0.6

Q22

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	0.1	0.1
B	0	0.4	0.6

Q28

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	4.8	0.1	4.8
B	0	0.6	0

Q25

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0	3.1	0
B	0.6	0.6	0.6

Q24

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	4.8	4.8	4.8
B	0	0	0

Q27

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	4.9	4.9	4.9
C	0.3	0.3	4.9
B	4.9	4.9	4.2

Q9

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0
C	0.3	0.3	4.8
B	0.3	0.3	0.6

Q1

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	0.6
C	0.3	0.3	4.4
B	0.3	0.3	1.3

Q2

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	0	0	3.6
C	0.3	0.3	4.6
B	0.3	0.3	4

Q23

	WAITING (V)	B/U TALIKING (V)	H/S TALIKIG (V)
E	4.8	4.8	4.8
C	0	0	0
B	4.3	4.3	4.3

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

< H/S-RF >

IC-U4 (RESET)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.8	3.8
2	0	0	0
3	3.8	3.8	3.8

IC-U3 (EEPROM)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.8	3.8
2	0	0	0
3	3.8	3.8	3.8
4	0	0	0
5	3.8	3.8	3.8
6	0	0	0
7	0	0	0
8	3.8	3.8	3.8

IC-U2 (MCU)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	0	0	0
2	0	0	0
3	0	0	4.4
4	3.8	0-2.8	1.8
5	3.8	3.8	4.1
6	0	3.5	0
7	3.8	3.8	4.1
8	3.8	3.8	4.1
9	3.8	0.02	0.02
10	1.8	1.5	0
11	0	0	0
12	3.8	0.02	0.02
13	0	0	0
14	3.8	3.8	4.1
15	0-3	1.2	1.4
16	3.8	1.5	1.6
17	0	0	0
18	1.5	1.4	0-0.01
19	0	0	0
20	3.8	3.8	4.1
21	0	0	0
22	0	0	0-2.1
23	0	0	0.04
24	3.8	3.8	4.1

	WAITING (V)	TALIKING (V)	CHARGING (V)
25	3.8	0.04	4.1
26	3.8	3.8	4.1
27	1.5	1.5	0-0.01
28	1.5	1.5	0-0.01
29	0	0	0
30	0	0	0
31	0	0	0
32	0	0	0
33	0	0	0
34	3.8	3.8	4.1
35	0	3.8	0
36	3.8	0	4.1
37	3.8	3.8	4.1
38	1.3	1.3	1.5
39	2	2	2.2
40	3.8	3.8	4.1
41	3.8	3.8	4.1
42	3.8	3.8	4.1
43	3.8	3.8	4.1
44	3.8	3.8	4.1

http://www.xiaoyu163.com

http://www.xiaoyu163.com

IC-U1 (RF)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.7	3.9
2	3.8	3.7	3.9
3	0-1.4	3.7	3.9
4	0-1.4	3.3	3.5
5	3.8	0.03	4
6	0	0	0.04
7	3.8	3.8	4
8	0	0	0
9	0.1	1.4	0.1
10	0.1	1.4	0.1
11	0.3	1.4	0.3
12	0.3	1.4	0.3
13	0.3	1.4	0.3
14	0.3	1.4	0.3
15	0-0.2	1.4	0.01-0.2
16	0-0.2	1.4	0.01-0.2
17	0.1	1.4	0.1
18	0.01-0.1	1.2	0.1
19	0.01-0.1	1.2	0.1
20	0.01-0.1	1.2	0.1
21	0-3.8	0	0.02
22	0	1	0.2
23	0-3.8	0.01-1.8	1.8
24	0-0.06	0.7	0.7
25	0	0.7	0.7
26	0	0.7	0.7
27	0.01-0.8	0.7	1
28	0.1-1.1	3.8	4
29	0.1-1	2.8	3.1
30	0	0	0
31	0.1-1.2	3.4	3.6
32	0.1-1.2	3.4	3.6

	WAITING (V)	TALIKING (V)	CHARGING (V)
33	0.1-1.2	3.8	4
34	0.1-0.9	2.4	2.7
35	0	0.05	1.3
36	0.01-0.4	1	1
37	0.3	0.7	0.3
38	0.1-0.8	2.3	2.6
39	0.3	1.4	0.3
40	0-0.1	1	1
41	0.3-1.8	2	2
42	0-0.6	0.02	0-0.6
43	0.1-1.1	3.8	4
44	0-0.1	3.8	4
45	0.3	0.6	0.3
46	0-0.8	1.1	2.3
47	0.07	2.2	0.2
48	0	0	0

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

Q3

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0-0.2	0.8	0.8
C	0.1-1.2	3.5	3.5
B	0.5-1.5	1.5	1.5

Q7

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	0.1-1.8	3.7	3.8
B	3.8	3.1	3.2

Q5

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.02	0.02	0.02
B	0	0.5	0

Q6

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	3.8	3.8	3.9
B	0	0	0

Q10

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	0.2	3.7	0.1
B	3.8	3.1	3.9

Q8

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	3.8	3.8	3.9
B	3.8	3.8	3.9

Q4

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.04	0.04	0.04
B	0.6	0	0.6

Q2

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	1.3	0
C	0.2	2.6	0.1
B	0.2	2	0.1

Q1

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0.2	0
C	0.2	3.4	0.1
B	0.2	1	0.1

Q9

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.2	3.5	0.1
B	0.2	0.7	0.1

Q1

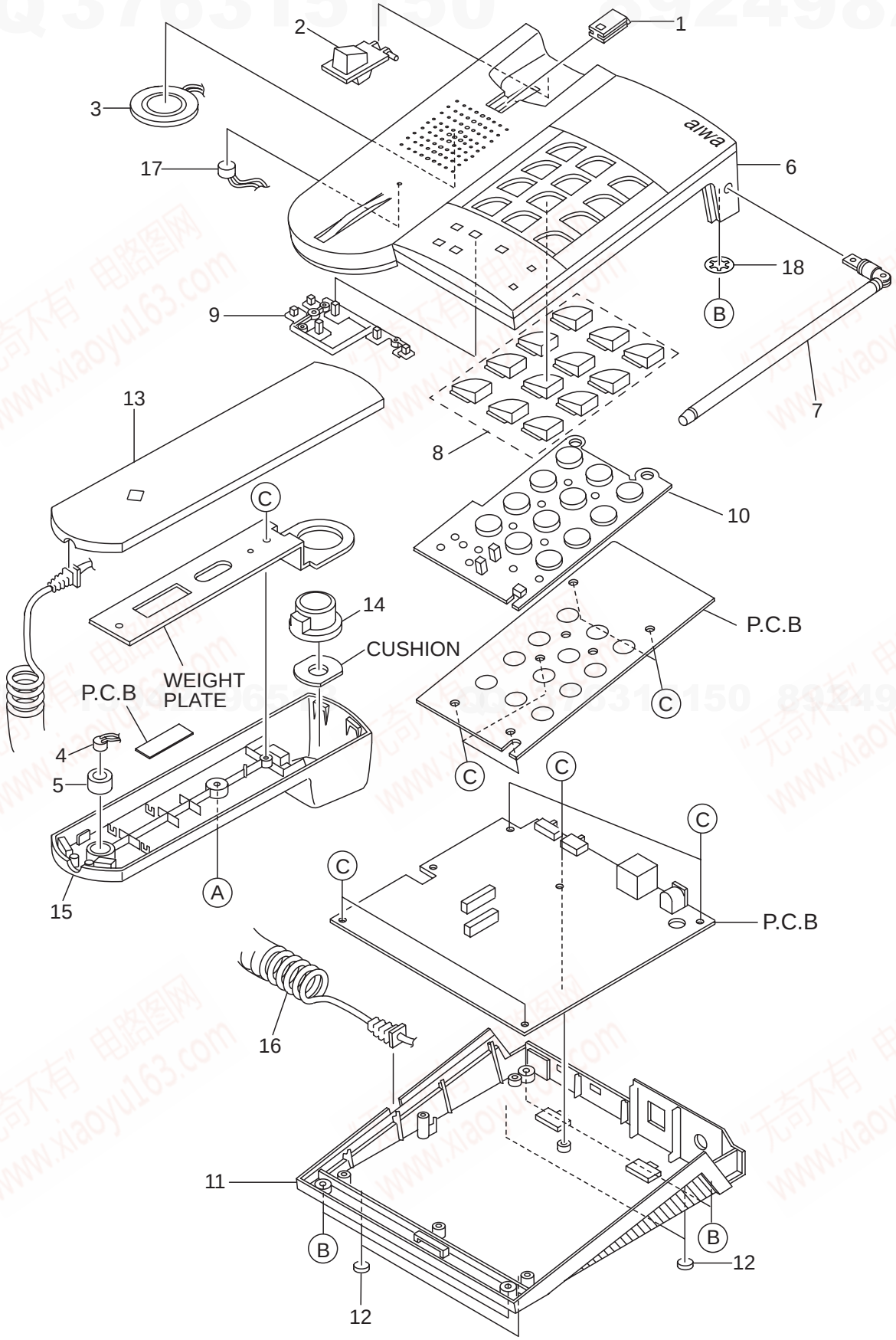
	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	1.5	4
C	0	0	0
B	3.8	3.8	4.1

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

MECHANICAL EXPLODED VIEW 1/2



http://www.xiaoyu163.com

http://www.xiaoyu163.com

MECHANICAL PARTS LIST 1/2

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	S8-PCD-060-020		KNOB,HANGER<5EZL>
1	S8-PCD-060-010		KNOB,HANGER<5EZB>
1	S8-PCD-060-030		KNOB,HANGER<5EZG>
2	S8-PCD-070-010		KNOB,HOOK SWITCH<5EZB>
2	S8-PCD-070-030		KNOB,SW HOOK<5EZG>
2	S8-PCD-070-020		KNOB,SW HOOK<5EZL>
3	S3-351-000-010		PIEZO BUZZER 35MM LF35B-29FB
4	S1-291-000-580		MIC CONDENSER
5	S0-251-100-000		MIC HOLDER (BLK)
6	S8-PCD-010-600		BASE TOP<5EZB>
6	S8-PCD-010-900		BASE TOP<5EZG>
6	S8-PCD-010-800		BASE TOP<5EZL>
7	S0-111-030-000		ANT,ROD TELESCOPIC
8	S8-PCD-040-200		KEY,DIAL NO
9	S8-PCD-050-020		KEY,FUNCTION<5EZL>
9	S8-PCD-050-010		KEY,FUNCTION<5EZB>
9	S8-PCD-050-030		KEY,FUNCTION<5EZG>
10	S8-PCD-200-000		RUBBER KEYPAD 116.5-84.5
11	S8-PCD-480-030		BASE BOTTOM<5EZG>
11	S8-PCD-480-010		BASE BOTTOM<5EZB>
11	S8-PCD-480-020		BASE BOTTOM<5EZL>
12	S0-251-520-000		RUBBER FOOT
13	S8-PCD-090-030		HANDSET BACK<5EZG>
13	S8-PCD-090-020		HANDSET BACK<5EZL>
13	S8-PCD-090-010		HANDSET BACK<5EZB>
14	S1-000-301-530		DYNAMIC RECEIVER SD-153B
15	S8-PCD-080-010		HANDSET FRONT<5EZB>
15	S8-PCD-080-020		HANDSET FRONT<5EZL>
15	S8-PCD-080-030		HANDSET FRONT<5EZG>
16	S1-010-002-910		TELCORD-C04USPP2.2UL<5EZB>
16	S1-010-003-110		TELCORD-CO4USPP 2.2UL<5EZG>
16	S1-010-003-210		TELCORD-CO4USPP2.2UL<5EZL>
17	S3-120-000-000		BUZZER,12MM
18	SB-032-065-450		INTERNAL LOCK WASHER 3.2-6.5-0
A	87-352-095-010		SCREW,ST3-8
B	87-741-096-410		SCREW,ST3-10MM
C	87-743-073-410		SCREW,ST2.6-6MM

COLOR NAME TABLE

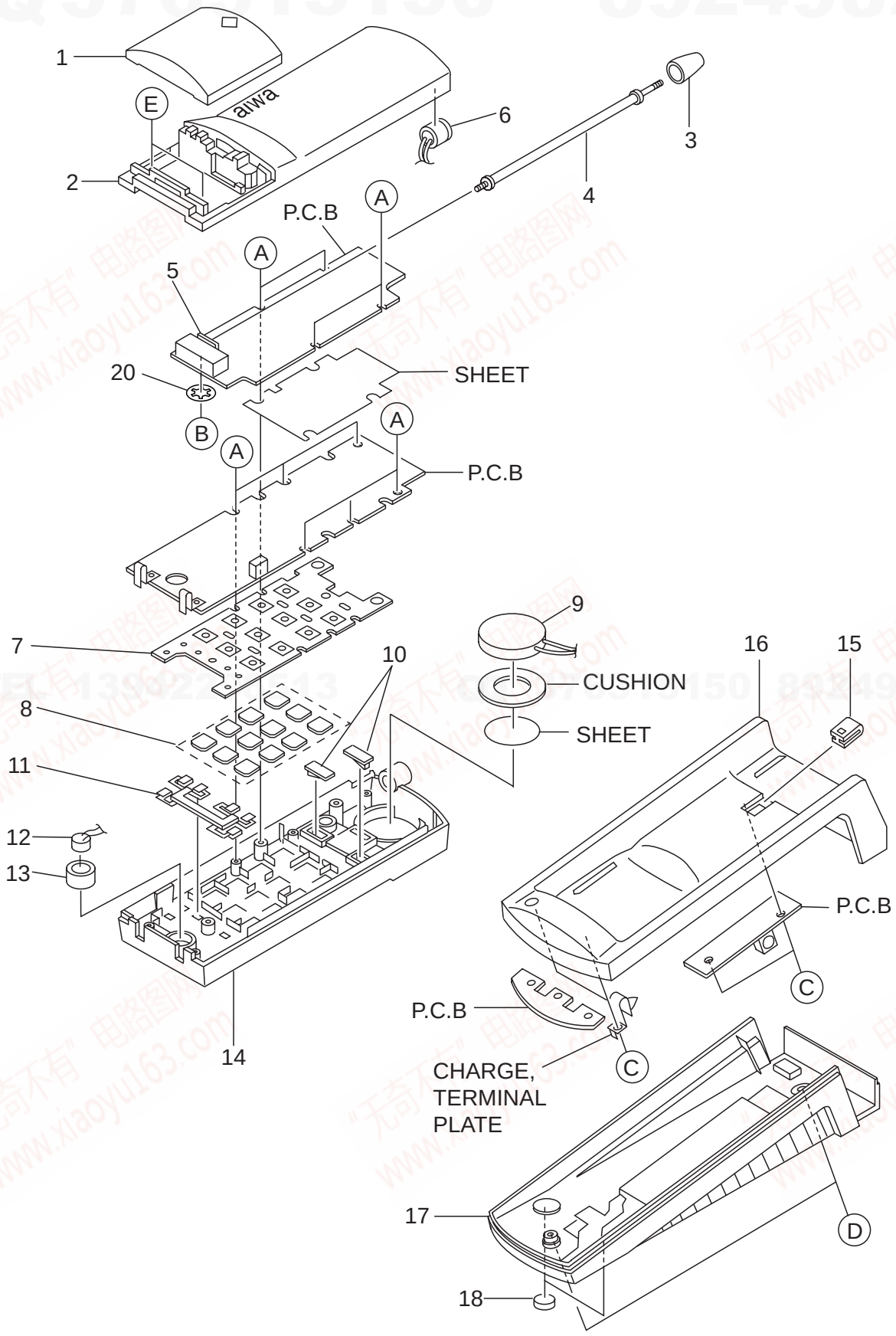
Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

www.xiaoyu163.com

http://www.xiaoyu163.com

http://www.xiaoyu163.com

MECHANICAL EXPLODED VIEW 2/2



http://www.xiaoyu163.com

http://www.xiaoyu163.com

MECHANICAL PARTS LIST 2/2

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	S8-PCD-120-010		DOOR,BATT<5EZB>
1	S8-PCD-120-040		DOOR,BATT<5EZL>
1	S8-PCD-120-050		DOOR,BATT<5EZG>
2	S8-PCD-110-600		H/S BACK<5EZB>
2	S8-PCD-111-000		H/S BACK<5EZG>
2	S8-PCD-110-900		H/S BACK(H/S-BL)<5EZL>
3	S8-PCD-170-010		KNOB,CAP ANT
4	S0-111-070-000		TELESCOPIC ROD ANTENNA
5	S8-PCD-440-000		ANT,HOLDER H/S
6	S3-120-000-010		BUZZER,LF12G-1WC 12MM
7	S8-PCD-210-000		RUBBER KEYPAD 107.5-44
8	S8-PCD-130-100		KEY,DIAL NO(H/S)
9	S0-301-500-030		DYNAMIC RECEIVER 38-21
10	S8-PCD-140-020		BTN,TALK<5EZL>
10	S8-PCD-140-010		BTN,TALK<5EZB>
10	S8-PCD-140-030		BTN,TALK<5EZG>
11	S8-PCD-160-020		KEY,FUNCTION<5EZL>
11	S8-PCD-160-030		KEY,FUNCTION<5EZG>
11	S8-PCD-160-010		KEY,FUNCTION<5EZB>
12	S1-291-000-640		MIC CONDENSER CMT64
13	S0-251-100-000		MIC HOLDER (BLK)
14	S8-PCD-100-500		HANDSET FRONT<5EZB>
14	S8-PCD-101-000		H/S FRONT<5EZG>
14	S8-PCD-100-900		H/S FRONT(H/S-BL)<5EZL>
15	S8-PCD-060-030		KNOB,HANGER<5EZG>
15	S8-PCD-060-020		KNOB,HANGER<5EZL>
15	S8-PCD-060-010		KNOB,HANGER<5EZB>
16	S8-PCD-180-300		CHARGE CAB TOP<5EZL>
16	S8-PCD-180-200		CHARGE CAB TOP(BLK)<5EZB>
16	S8-PCD-180-400		CHARGE CAB TOP(GN)<5EZG>
17	S8-PCD-190-020		CHARGE CAB BOTTOM<5EZL>
17	S8-PCD-190-010		CHARGE CAB BOTTOM(BLK)<5EZB>
17	S8-PCD-190-030		CHARGE CAB BOTTOM(GN)<5EZG>
18	S0-251-520-000		RUBBER FOOT
19	S1-500-271-500		CONN,15P 1.5MM
20	SB-022-048-300		INTERNAL LOCK WASHER 2.2-4.8-0
A	S0-502-000-520		SCREW,ST2-5
B	87-263-033-210		SCREW,2x4
C	87-743-073-410		SCREW,ST2.6-6MM
D	87-353-076-210		SCREW,+2.6-12
E	87-743-036-410		SCREW,ST2-8

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

http://www.xiaoyu163.com

http://www.xiaoyu163.com

アイワ株式会社 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)
AIWA CO.,LTD. 2–11, IKENOHATA 1–CHOME, TAITO-KU, TOKYO 110-8710, JAPAN TEL:03 (3827) 3111

737004
Printed in Singapore

http://www.xiaoyu163.com